

STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

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PUBLIC HEARING
REGARDING WATER RIGHT APPLICATIONS FOR THE
DELTA WETLANDS PROJECT
PROPOSED BY DELTA WETLANDS PROPERTIES
FOR WATER STORAGE ON WEBB TRACT, BACON ISLAND,
BOULDIN ISLAND, AND HOLLAND TRACT
IN CONTRA COSTA AND SAN JOAQUIN COUNTIES

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HELD AT

901 P STREET
SACRAMENTO, CALIFORNIA
WEDNESDAY, AUGUST 20, 1997
9:00 A.M.

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Reported by:

MARY GALLAGHER, CSR #10749

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OPENING OF HEARING 2778

AFTERNOON SESSION 2876

DELTA WETLANDS PROPERTIES:

REBUTTAL TESTIMONY:

PANEL:

WARREN SHAUL 2814

CROSS-EXAMINATION REBUTTAL BY:
PANEL:

MICHAEL KAVANAUGH:

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CONTRA COSTA WATER DISTRICT 2803

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THE DEPARTMENT OF FISH AND GAME:

REBUTTAL CROSS-EXAMINATION BY:

EAST BAY MUNICIPAL UTILITY DISTRICT	2871
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WEDNESDAY, AUGUST 20, 1997, 9:00 A.M.

SACRAMENTO, CALIFORNIA

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HEARING OFFICER STUBCHAER: Good morning. We'll reconvene the Delta Wetlands Water Rights Hearing. Is there a status report from the parties on the Fish and Game objections on the rebuttal testimony of Mr. Shaul yesterday?

MR. NELSON: Mr. Stubchaer?

HEARING OFFICER STUBCHAER: Yes.

MR. NELSON: If possible, we have Mr. Kavanaugh who's a witness for -- on the water quality who is only here for a very short time this morning, he has other commitments. We were wondering if we can start with him and then go on with Mr. Shaul after that and just proceed that way.

HEARING OFFICER STUBCHAER: You can start the cross-examination of him. I'd still like to get a pre-status report just so we know what we're looking at.

MS. MURRAY: It's my understanding that Warren and Jim did come to an understanding of the figures. And both did independent new figures on 7 and 12. And I guess we will both enter them as both a Delta Wetlands and DFG Exhibit. And then we will cross Warren on that process that we went through last night.

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1 HEARING OFFICER STUBCHAER: Okay. Very good.

2 MS. MURRAY: And on that tables that are in DFG 5,
3 we have not had a chance to revisit that issue of
4 possibly changing any of those numbers, and would like to
5 hold that open.

6 HEARING OFFICER STUBCHAER: Yes, I understand.
7 Very good. Thank you.

8 Okay. Ready for the cross-examination of
9 Mr. Kavanaugh on his rebuttal testimony. How many
10 parties wish to cross-examine Mr. Kavanaugh? Fish and
11 Game.

12 All right. Mr. Nomellini.

13 ----oOo----

14 REBUTTAL CROSS-EXAMINATION OF DELTA WETLANDS PROPERTIES

15 BY CENTRAL DELTA WATER AGENCIES

16 BY DANTE JOHN NOME LLINI

17 MR. NOME LLINI: Good morning. Dante John
18 Nomellini. Dr. Kavanaugh, I don't know if you were here
19 for Dr. Horne's testimony, but I think both you and he
20 had indicated that the DOC resulting from the Delta
21 Wetlands Project could be on the low end, much less than
22 the DOC that would result from agricultural operations.

23 And he testified also that operationally the
24 project could be carried out such that he agreed with
25 your low end of the projection. And my question to you

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1 is: Whether or not you believe the project could be
2 operated so that it would not in any way degrade water
3 quality when the water is discharged from the Delta
4 Wetlands Project?

5 DR. KAVANAUGH: You mean in terms of degradation
6 that might occur in the channels as well as at the export
7 locations?

8 MR. NOMELLINI: Yeah, in the channels. If we talk
9 about the ambient water quality in the channels at the
10 time of discharge, could the project be operated so that
11 it could meet a condition of no degradation of water
12 quality in the channels?

13 DR. KAVANAUGH: As I believe I said in my previous
14 testimony, the DOC concentrations in the reservoir
15 islands are likely to increase above the concentration of
16 the DOC in the diverted water. And, presumably, most of
17 the time the diversion -- the discharges back into the
18 Delta will occur during the months of July through
19 September.

20 And during those months, I believe, the DOC in
21 the reservoir islands would be somewhat higher than the
22 DOC in the channels. So then it becomes a mixing
23 question as to: What fraction of the discharge could be
24 mixed in the channels? I think -- my interpretation of
25 non-degradation is no increase of DOC into the receiving

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1 water outside of some mixing zone. And under those
2 conditions, it might be possible to operate such that the
3 DOC concentrations outside of that mixing zone were
4 within some prescribed limits.

5 MR. NOMELLINI: But it could not -- excuse me. Go
6 ahead.

7 DR. KAVANAUGH: But -- but the concentration of DOC
8 in the reservoir islands will likely be higher than what
9 is -- than what the DOC is in the channels.

10 MR. NOMELLINI: So there would have to be tolerance
11 for degradation, I'm talking about outside the mixing
12 zone?

13 DR. KAVANAUGH: Yes.

14 MR. NOMELLINI: But some tolerance for degradation
15 in order for the project to be operated, is that your
16 testimony?

17 DR. KAVANAUGH: Yeah, I haven't assessed that in
18 detail, but I believe that you would have to have some
19 tolerance, yes.

20 MR. NOMELLINI: Thank you.

21 HEARING OFFICER STUBCHAER: Okay. Mr. Roberts.

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REBUTTAL CROSS-EXAMINATION OF DELTA WETLANDS PROPERTIES
BY THE CALIFORNIA URBAN WATER AGENCIES
BY JAMES ROBERTS

MR. ROBERTS: Good morning. Good morning,
Dr. Kavanaugh.

DR. KAVANAUGH: Mr. Roberts.

MR. ROBERTS: We've got a couple of overheads that
we're going to use, so I'm going to ask Peter to put them
up for us.

Dr. Kavanaugh, you stated on rebuttal that 7 to
8 milligrams per liter of DOC in Delta Wetlands's
reservoirs was a worse case scenario. And that 16
milligrams per liter is highly unlikely and not credible.
Is that correct?

DR. KAVANAUGH: That's correct.

MR. ROBERTS: Peter, could we put up Delta Wetlands
42. And we made this transcription from a hard copy we
were using, so I apologize for the marks on there.
Please, ignore them.

On this Delta Wetlands 42 here, the far left
column, DOC of diverted water, that assumes that the
water diverted to the islands will not exceed 4
milligrams per liter. Correct?

DR. KAVANAUGH: That's correct.

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1 MR. ROBERTS: Peter, could you please put up Contra
2 Costa Water District Exhibit 4. This exhibit shows MWQI
3 data from 1991 to 1997. Looking at this exhibit, doesn't
4 the data show that in the winter periods when the project
5 will be diverting, the DOC can be 5 to as much as 10
6 milligrams per liter?

7 DR. KAVANAUGH: That data in that chart I have
8 looked at in some detail. And as I have stated in some
9 of my previous testimony, the database on which those
10 charts are developed are a relatively limited number of
11 samples. For example, if you look in detail you'll see
12 the sampling frequency during the winter periods is quite
13 sparse. As I recall there were approximately 12 samples,
14 for example, in January over a 5 to 6 year period, which
15 amounts to two grab samples in a month's period.

16 So while this particular chart suggests that on
17 occasions the DOC in the Banks export location is quite
18 high which, of course, also has to be dealt with by the
19 water treatment plants, the particular value on an
20 average basis, which is what you really have to look at
21 because you're diverting water over an one- to two-month
22 period, is going -- likely going to be quite a bit
23 smaller.

24 MR. ROBERTS: Well, looking at this data, again,
25 which is the last six years of data, it looks to me like

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1 there's a number of one- to two-year periods -- or one-
2 to two- to three-year periods when you would be filling
3 when it's going to be substantially over four, five, six,
4 seven up to ten percent.

5 DR. KAVANAUGH: No, I don't disagree with the
6 point --

7 MR. ROBERTS: Okay.

8 DR. KAVANAUGH: -- that concentrations in the
9 channels sometimes are higher than four. My point is,
10 and I think this is a crucial point, that number one:
11 The database that is used to put this chart together is
12 quite limited. And so you really don't know what the
13 real average concentrations of DOC are in the water
14 during those months.

15 And I think a better record is to go back to the
16 water plants and ask them, you know, what kind of average
17 concentrations they're having to deal with over those
18 winter months. I can't believe they have to deal with a
19 eight, nine milligram per liter period over a long per
20 period of time. So two grab samples over a one month
21 period I don't think is sufficient to identify what the
22 average DOC concentrations are going to be in the months
23 when diversions are likely to occur. Whether it's going
24 to be four or five, I think there are times when it will
25 be higher than are four, that's true.

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1 MR. ROBERTS: Irrespective of your opinion on the
2 limited data here, it does show, doesn't it, that if
3 you -- if you use that range of 5 to 10 milligrams per
4 liter and then have an increase in DOC as suggested in
5 the table here of 2 to 4, you end up with a range of 7 to
6 14 milligrams per liter in the reservoir?

7 DR. KAVANAUGH: The -- certainly, if you add the
8 numbers up that way. The point I'm making is that's not
9 how it would work. How it would work is you would have a
10 diversion period of, say, up to a month. And during that
11 period of time you would have some average DOC in that
12 diverted water.

13 The point of my other chart, if you can put that
14 other chart back on, I'd just like to stress it. The
15 point of that chart is to look at the incremental change
16 in the amount of organic carbon. And if you look at the
17 2 columns there at 6 to 8, where the final DOC is 6 and
18 8, the incremental increase is what we're concerned
19 about. So what I've said in my testimony and what I have
20 evaluated is that an increase of the DOC of somewhere
21 between 2 and 4 is a likely scenario. So you add that to
22 what your average diverted water. And that's the numbers
23 that you would be likely to be seeing. Not taking into
24 account any losses due to UV degradation and biological
25 degradation of DOC.

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1 I think it's important to point out that the DOC
2 in the first flushes that come off of the land -- and the
3 reason you have those high DOC's is because of the litter
4 that's on the ground and such. This is a relatively
5 transient phenomena in the DOC that comes off there is
6 fresh. So it's relatively labile. It's not the old
7 recalcitrant DOC that you see in the rivers.

8 So the situation is, obviously, more complex
9 than just adding two numbers together. But I think the
10 key point of this chart that I tried to make was you have
11 to look at the incremental increase to understand what
12 might happen.

13 MR. ROBERTS: This table also assumes the final DOC
14 level at a full 22-foot reservoir. And I believe your
15 testimony was that that full reservoir would provide the
16 greatest opportunity for dilution. Is that correct?

17 DR. KAVANAUGH: Yes, that's correct.

18 MR. ROBERTS: Okay. Wouldn't it follow then that
19 if Delta Wetlands in some year is not able -- is able to
20 fill a reservoir at only half of capacity, therefore,
21 getting only half of dilution water that the increase in
22 DOC would about double in the reservoir, you would have
23 less dilution?

24 DR. KAVANAUGH: Yeah. Well, it's not obvious that
25 it would double, but it, certainly, would be higher than

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1 if you had 22 feet. And as I stated in my testimony, if
2 you have a shallower reservoir, obviously, the amount of
3 organic carbon in those -- in that condition depends on
4 how long you have the water sitting there. It depends on
5 the climatological conditions and such. The
6 concentrations of DOC in a shallower reservoir are likely
7 to be higher than in a 22-foot reservoir.

8 MR. ROBERTS: Now, if the data shown in Contra
9 Costa Water District 4 is accurate, assume that. And
10 assume that you have a half full reservoir, then couldn't
11 you get your 4 DOC -- we'll start with 4 DOC channel
12 water.

13 DR. KAVANAUGH: Uh-huh.

14 MR. ROBERTS: An increase of 4 to 8 -- 4 or up to
15 10 DOC of channel water. And an increase of 4 to 8 on
16 the half full reservoir. So you could have something
17 from 9 to 18 milligrams per liter coming off the
18 reservoir, again, assuming that this chart is accurate.

19 DR. KAVANAUGH: Well, again, I would dispute that
20 the chart that you put up there with respect to the time
21 series is really an accurate description of what's going
22 on in the channels. And I, again, would refer to the
23 difficulties that water treatment plants would have if,
24 in fact, the concentrations of DOC in the Banks export
25 water were really that high all the time. I think what

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1 you're seeing there is spikes. And I think that distorts
2 the data.

3 Having said that, again, if you look at a
4 shallower reservoir and you look at diverting water
5 during times of high runoff, there is the potential for
6 higher DOC's. I don't think the high numbers that you
7 quoted are accurate though. I think that's, again,
8 adding extreme values to extreme values.

9 I think the key point here is that this is a
10 lifetime project. It's going to be operating over a long
11 period of time. As Dr. Horne pointed out and as I would
12 stress, the amount of DOC that is going to be released
13 from the sediments would decrease with time. And over
14 time you will have out there, I think, the situation
15 where DOC will not be as severe an issue as it will be,
16 say, in the first year or so of operation.

17 MR. ROBERTS: On Delta Wetlands 45, I don't have a
18 copy of that to put up, but it was basically a table of
19 the D/DBP proposed State Water Rule. And I just have one
20 simple question on it. There are -- on the TOC removal
21 portion, on the exhibit here it says that if you have
22 less than 4 milligrams per liter of TOC the removal
23 requirement is 30 percent. Isn't that 25 percent?

24 DR. KAVANAUGH: The number of 25 versus 30 has been
25 floating around. It is my understanding that the current

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1 proposed number is 30. The original number that was --
2 excuse me, the original proposed number was 30. It has
3 been in the regulatory -- in the negotiated settlement it
4 has been reduced to 25. The 30 number, however, is what
5 EPA tells us should be used as the appropriate number
6 until the rule has been promulgated.

7 MR. ROBERTS: Have you had an opportunity to
8 read -- I forget the number, the CUWA Exhibit which is
9 the EPA agreement, EPA and stakeholder agreement?

10 DR. KAVANAUGH: Yes, I have. Yes, I have.

11 MR. ROBERTS: Okay. And does that have a 25
12 percent?

13 DR. KAVANAUGH: I believe it has a 30 in it -- I
14 believe it has the 25, yes. But my point is that in
15 terms of discussing this in public it is our
16 understanding and my understanding based on talking to
17 the EPA staff that the 30 percent is the number that was
18 originally proposed. And until the law, or the rule is
19 promulgated that is the publicly discussed number.

20 MR. ROBERTS: And I think you testified that you
21 weren't a part of that Reg/Neg process?

22 DR. KAVANAUGH: No, I was not a part of that.

23 MR. ROBERTS: Okay. Also, isn't the 35 percent TOC
24 removal requirement in the water when TOC is over four
25 milligrams per liter, isn't that triggered by a monthly

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1 measurement?

2 DR. KAVANAUGH: Well, the decision as to what
3 percent removal you must achieve is based on the
4 Information Collection Rule. And, so, utilities will be
5 collecting data over a one to two year period. And on
6 the basis of that data tell EPA what their quarterly
7 running annual average is, or in this case probably
8 monthly running average. And they will use that number
9 to determine what their target TOC removal is. And that
10 will initiate the process, at least, that's my
11 understanding of it.

12 MR. ROBERTS: The monthly number?

13 DR. KAVANAUGH: Yes -- no, not the monthly number,
14 the monthly running average. There's a big difference.
15 It's not an individual month. It's a running monthly
16 annual running average. So after you collect 12 months
17 of samples or longer, you will tell EPA what your annual
18 TOC is. And that will determine what your target percent
19 removal will be for operating the treatment plant.

20 MR. ROBERTS: So your understanding of the rule is
21 that if in one month you're over 4 milligrams of TOC
22 there is no removal requirement?

23 DR. KAVANAUGH: No removal requirement, well, no,
24 that's not what I said. What I said was that in order to
25 determine what your target TOC percent removal is going

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1 to be in your operating treatment plant, you will prepare
2 for the EPA an estimate of your annual average TOC.

3 During those 12 months, or during the period of
4 time that you collect DOC or TOC data, some months you
5 may have a monthly average that exceeds 4. But if the
6 total sum of those -- of that data gives you an annual
7 average that's less than 4, then your target TOC removal
8 will be 25 to 30 percent, whatever the final number is.

9 MR. ROBERTS: Okay. That's -- that's -- is that
10 your understanding from the July 29th, 1994, proposed
11 Federal Register Rule?

12 DR. KAVANAUGH: Yes, it is.

13 MR. ROBERTS: One final question on the D/DBP
14 regulations, isn't protection of drinking water source
15 quality through a source control a critical component of
16 the D/DBP Rule?

17 DR. KAVANAUGH: Yes, I believe it is. And,
18 certainly, removing agricultural drainage is an
19 appropriate strategy in trying to achieve that goal.

20 MR. ROBERTS: And what if you substitute that with
21 higher discharges in certain months?

22 DR. KAVANAUGH: Well, the important strategy in
23 terms of operating the Delta Wetlands Project is to
24 assure that the discharges from the Delta Wetlands island
25 do not have a significant impact on the DOC in the -- or

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1 TOC in the export waters. So, certainly, you would want
2 to put a constraint on the project that assures that
3 there's no significant increase in the parameter that
4 would control how treatment plants operate. And that
5 would be the monthly running annual average.

6 So, in my opinion, when you put a constraint on
7 the project it should be done in that context. In other
8 words, in the appropriate regulatory framework that is
9 going to be used to determine whether or not -- whether
10 treatment plants are in compliance with the TOC removal.

11 MR. ROBERTS: Okay. Based on your understanding of
12 the regulation?

13 DR. KAVANAUGH: That's right.

14 MR. ROBERTS: Okay. Could we put up Delta Wetlands
15 48, please. My question here: Under the columns
16 "quarterly running annual average," aren't quarterly
17 running annual averages calculated every month for the
18 prior three months rather than at the end of a certain
19 calendar, or calendar quarter?

20 DR. KAVANAUGH: The quarterly running annual
21 average is based on the average of the previous three
22 months, that's correct.

23 MR. ROBERTS: Of each month, okay.

24 DR. KAVANAUGH: Yes.

25 MR. ROBERTS: So I guess what you've shown in these

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1 columns is just some sort of a representative ones for
2 those three quarters?

3 DR. KAVANAUGH: Well, the base condition in the
4 quarterly running average values in the third row
5 there -- third column, excuse me, those are based on
6 taking the first three months, averaging those --

7 MR. ROBERTS: Right.

8 DR. KAVANAUGH: -- and calculating the quarterly
9 average. And then using that as the -- and then taking
10 the next three months and so on.

11 MR. ROBERTS: Right. But you would also, wouldn't
12 you, do the second, third, and fourth month, for example,
13 and do a quarterly running average for those?

14 DR. KAVANAUGH: You mean just keep it going?

15 MR. ROBERTS: Yeah.

16 DR. KAVANAUGH: You could possibly do it that way,
17 sure.

18 MR. ROBERTS: And if you did it that way, for
19 example, for the months of July, August, and September
20 you'd have a significantly higher quarterly running
21 average than any of the numbers you've shown here,
22 wouldn't you?

23 DR. KAVANAUGH: The quarterly running average would
24 increase in those months, yes, that's correct. But the
25 key issue there is comparing the base condition to the

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1 8 milligram per liter condition. And, you know, there
2 you would see relatively modest differences.

3 MR. ROBERTS: Now, in this exhibit I believe you
4 said you used the median level of bromide and you felt
5 that was more reasonable than using the 90th percentile?

6 DR. KAVANAUGH: That's correct.

7 MR. ROBERTS: Okay. But in presenting this -- just
8 presenting this with the median numbers aren't you
9 ignoring the real probable compliance assurances when the
10 bromide levels are above the median, such as up to the
11 80th, 90th percentile level?

12 DR. KAVANAUGH: Well, if the appropriate -- the
13 reason that I chose the median was to make a comparison
14 between the three cases that Mr. Krasner evaluated. And
15 in answer to your question: Clearly, there will be times
16 when the bromide level is higher than the average. And
17 there will be times when it's lower. And to use the 90th
18 percentile as the basis for your comparison is really not
19 accurate. There will be times when the bromide levels
20 are less than the median. There will be times when it is
21 greater.

22 The other key point about this it has to be
23 remembered that the bromide concentrations are based on a
24 few years of data. And the data was taken during dry
25 years. So we really don't know what the real long term

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1 average of bromide is. It's probably less than the .3
2 that we're currently seeing, because the data was taken
3 during dry years.

4 MR. ROBERTS: But, again, in the years when it's
5 the 80th and 90th percentile, those are going to be the
6 problem years, aren't they?

7 DR. KAVANAUGH: Well, you don't have an 80th to
8 90th percentile value in a year. You have it during the
9 year. And there is -- as I pointed out, there will be
10 some times when that value is quite high, the 90th
11 percentile, but it is a 90th percentile value. So one
12 has to be careful about how these numbers are used.

13 The reason I used the median is I think that's a
14 more reasonable approach to estimating the concentrations
15 of any parameter that you're dealing with in a regulatory
16 context. They regulations are not based on 90th
17 percentile values, they're based on these running
18 averages.

19 The point here on this chart, again, is the
20 calculations that were done -- and I'm just taking
21 Mr. Krasner's numbers, they were done based on using the
22 DOC that comes out of the Delta. They do not account for
23 any treatment efficiency removal of DOC. So they seem
24 high. In fact, if you put on the 25, or 30 percent DOC
25 requirements you would see a substantial reduction in the

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1 value of these numbers.

2 The numbers in this chart, again, are done for a
3 comparative purpose. And they show, I think quite
4 clearly, that the net impact even at 8 milligrams per
5 liter is quite modest if not even somewhat of a benefit.

6 MR. ROBERTS: You just said that regulations aren't
7 based on the 90th percentile. But don't they have to be
8 met one-hundred percent of the time?

9 DR. KAVANAUGH: No, they do not.

10 MR. ROBERTS: That's your understanding of the
11 regulation?

12 DR. KAVANAUGH: That's my understanding. My
13 understanding of the regulations is that you take a
14 sample and you take that sample and use it as a basis for
15 determining your -- in the case of THM's, a quarterly
16 running average. In the case of DOC it will be the
17 monthly average computed on an annual average basis --
18 running average basis. There was nothing ever intended
19 in the regs that said every time you go out and take a
20 sample you have to be under the MCL.

21 MR. ROBERTS: But you -- I'm sorry.

22 DR. KAVANAUGH: Certainly, you would desire to
23 operate your plant that way. And you would make efforts
24 to do that.

25 MR. ROBERTS: But whatever the regulatory

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1 requirement is for the MCL, you have to meet that
2 requirement?

3 DR. KAVANAUGH: Yes, that's true.

4 MR. ROBERTS: Not half the time?

5 DR. KAVANAUGH: No, not half the time. You have to
6 meet it a hundred-percent of the time, but the MCL and
7 the sampling are very key components of that. I mean
8 you're -- you're implying that it's a hundred percent of
9 the time meaning every moment.

10 MR. ROBERTS: That's not what I meant.

11 DR. KAVANAUGH: Okay. The point I'm trying to make
12 is it's based on a sampling frequency.

13 MR. ROBERTS: Right. Okay. Now, your rebuttal
14 testimony focuses on the fact that you think looking at
15 the monthly averages is not as important as looking at
16 the running quarterly average. Is that correct?

17 DR. KAVANAUGH: Well, the context of my statement,
18 again, was how do you evaluate whether or not one project
19 is better or worse than another? What do you use to
20 compare? And what I used, and what I think is
21 appropriate to use is the same kind of parameter that
22 would be used in the context of compliance evaluation.

23 And the parameter, as I pointed out, is you use
24 the quarterly running annual average, or the monthly
25 annual running average. So I don't know if I would say

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1 one is more important than the other. I think the
2 question really is: Which one do you use to determine
3 the comparison between one situation, one alternative
4 versus another?

5 MR. ROBERTS: I see. Did you have a chance to read
6 CUWA Exhibit 16 -- actually, I think you weren't here
7 when Mr. Krasner gave his rebuttal testimony, were you?

8 DR. KAVANAUGH: I was not.

9 MR. ROBERTS: Okay. CUWA 16 was -- is an EPA work
10 on THM effects on spontaneous abortion.

11 DR. KAVANAUGH: I did not hear that.

12 MS. BRENNER: I -- I'll wait for the question,
13 but --

14 MR. ROBERTS: Okay. I'll do the question. As I
15 say, in your rebuttal testimony you focused on quarterly
16 running averages?

17 DR. KAVANAUGH: Yes.

18 MR. ROBERTS: Okay. Now, if this current EPA
19 research, that I understand you're not familiar with but
20 assume this, ultimately demonstrates that a woman's
21 chances of spontaneous abortion increase from 8 to 24
22 percent when consuming more than 75 micrograms per liter
23 of DOC during that first trimester.

24 Wouldn't you agree then that in that case the
25 project's potential to increase THM's on a monthly basis

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1 is an important factor to consider?

2 DR. KAVANAUGH: Well, you've entered into a whole
3 region of tremendous controversy in the regulated
4 community as to how disinfection by-products and other
5 compounds in the water should be regulated because of
6 their potential health effects. And I think you're --
7 you posed a very hypothetical situation.

8 I think that it is prudent for purveyors of
9 water and people who are running water treatment plants
10 to strive to keep disinfection by-products to a minimum.
11 And I think that the Delta Wetlands Project can be
12 integrated into that goal by appropriately designing a
13 monitoring program and a mitigation measure that assures
14 that the DOC in the export waters remains below some
15 significance level. And if that's done, all these other
16 issues that you raised, certainly, would be addressed
17 taking into account, of course, that there is some
18 potential benefit during approximately nine months of the
19 year in terms of reduced DOC discharges.

20 MR. ROBERTS: And should that monitoring and
21 mitigation appropriate -- monitoring mitigation
22 requirement apply on a monthly basis if that's
23 appropriate?

24 DR. KAVANAUGH: I think it should be applied to a
25 monthly running annual average, not to an individual

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1 number.

2 MR. ROBERTS: Irrespective, if it's shown that a
3 monthly number has a negative impact on water quality?

4 DR. KAVANAUGH: Well, I think that that's such a
5 hypothetical situation that I don't know of any
6 information out there that's available yet that shows
7 that exposure in one month, or in one drinking water one
8 two-liter day that you have the potential to cause
9 significant health affects.

10 I think all of these data, as you know, for
11 health defects are based on models of risk analyses that
12 are quite controversy. And so I think -- I think that to
13 try to regulate disinfection by-products, or any
14 parameter on the basis of a single month, or a single
15 value I just don't think it's ever going to happen.

16 MR. ROBERTS: If you have the opportunity you may
17 want to look at CUWA 16.

18 DR. KAVANAUGH: Well, I just back from being a part
19 of a peer review of the Cincinnati Laboratories and read
20 the research plan for disinfection by-products. And
21 currently several of the EPA laboratories are undertaking
22 extensive evaluation of disinfection by-products. And
23 they are wrestling with this issue as we speak.

24 And I think that your situation is so
25 hypothetical that I -- I did look, actually, at the data

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1 that were presented in there. And as I understand it, it
2 was unpublished studies. And I just can't imagine that
3 that kind of information could be used in this context to
4 make any kind of decision.

5 MR. ROBERTS: In the EPA context?

6 DR. KAVANAUGH: Well, the EPA is reviewing that
7 kind of information in trying to weigh all these
8 different factors.

9 MR. ROBERTS: I understand.

10 DR. KAVANAUGH: I would predict that even as
11 Stage II moves forward, which is not an obvious outcome,
12 the issue of compliance monitoring will be similar to
13 what we see in Stage I.

14 MR. ROBERTS: In your rebuttal testimony, you
15 stated that it's important to look at the water quality
16 at the point of extraction for treatment as opposed to
17 looking at the Banks pumping plant. Do you recall that?

18 DR. KAVANAUGH: Yes.

19 MR. ROBERTS: Isn't the water supply to Contra
20 Costa Water District, Alameda County Water District,
21 Santa Clara Valley Water District, and others,
22 essentially, extracted at or near Banks and delivered
23 directly to those treatment plants?

24 DR. KAVANAUGH: Well, directly is not accurate. I
25 mean there are off-line storage reservoirs, certainly,

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1 for Contra Costa Water District, but the time between the
2 export and the treatment is certainly less than what it
3 would be in Southern California.

4 MR. ROBERTS: In your rebuttal testimony you also
5 stated that Northern California Utilities use a wide
6 range of coagulant doses. Is that correct?

7 DR. KAVANAUGH: That's correct.

8 MR. ROBERTS: An isn't true that Southern
9 California Utilities don't use such a wide range of
10 coagulant doses?

11 DR. KAVANAUGH: That's my understanding, yes.

12 MR. ROBERTS: You recall Dr. Krasner's testimony
13 that in -- for example, used as a range of 5 to 10
14 milligrams per liter?

15 DR. KAVANAUGH: I wasn't aware -- I believe that's
16 correct, yes.

17 MR. ROBERTS: Wouldn't any increases of DOC in the
18 source water require Southern California users --
19 Utilities to increase the use of coagulants?

20 DR. KAVANAUGH: Well, if the Southern California
21 utilities must meet the enhanced surface treatment rule,
22 which I believe that they will since the DOC is above
23 two, they will obviously have to install the necessary
24 processes to achieve the 25 to 30 percent removal of
25 efficiency that's required. And, of course, that will

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1 have to be done regardless of whether there's a Delta
2 Wetlands Project or not.

3 MR. ROBERTS: But any activities that increase the
4 TOC's wouldn't that increase the operational costs?

5 DR. KAVANAUGH: I don't think so. As I pointed out
6 in my testimony the comparison has to be between the base
7 case and whatever alternative you're looking at. And as
8 I pointed out in my analysis in one of my exhibits, there
9 is the potential for an actual decrease, or at least no
10 impact on treatment costs relative to having to meet the
11 Enhanced Water Treatment Rule.

12 And if you did have to increase your coagulant
13 dose during those months of discharge, the relative
14 impact would be relatively small. And I use the number
15 40 to 50 cents per acre foot. So I believe that's how
16 you have to look at this. And as I pointed out, to say
17 that it's \$26 an acre foot and imply that the Delta
18 Wetlands Project will be responsible for that is
19 inaccurate.

20 The Delta Wetlands Project's only impact would
21 be a potential modest increase in treatment cost during
22 the months of discharge. And I think that can be
23 mitigated appropriately.

24 MR. ROBERTS: I think that's it, Dr. Kavanaugh.
25 Thank you.

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1 DR. KAVANAUGH: Thank you, Mr. Roberts.

2 MR. ROBERTS: Thank you, Mr. Stubchaer.

3 HEARING OFFICER STUBCHAER: Thank you. Mr. Maddow.

4 ---oOo---

5 REBUTTAL CROSS-EXAMINATION OF DELTA WETLANDS PROPERTIES

6 BY CONTRA COSTA WATER DISTRICT

7 BY ROBERT MADDOW

8 MR. MADDOW: Thank you, Mr. Stubchaer. Good
9 morning, Dr. Kavanaugh.

10 DR. KAVANAUGH: Mr. Maddow.

11 MR. MADDOW: I heard your comment a moment ago
12 about the off-line storage of the Contra Costa Water
13 District. I just want to be sure I know what you were
14 referring to.

15 DR. KAVANAUGH: I was referring to the Mallard
16 Reservoir.

17 MR. MADDOW: Do you know the capacity of the
18 Mallard Reservoir in terms of its ability to buffer the
19 effects of the constituents of Delta water?

20 DR. KAVANAUGH: I understand it's relatively short.

21 MR. MADDOW: Two days, isn't it?

22 DR. KAVANAUGH: Uh-huh.

23 MR. MADDOW: And you testified -- pardon me. You
24 testified water treatment plants like those operated by
25 the Contra Costa Water District only have the capability

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1 to increase coagulant doses, for example, to respond to
2 increases in DOC, these plants have the flexibility to
3 deal with varying constituent levels in their source
4 water. Is that correct?

5 DR. KAVANAUGH: That's correct.

6 MR. MADDOW: Have you also referred in that
7 testimony to the other water treatment plants in Contra
8 Costa County that retrieve -- excuse me, receive and
9 treat water from the Contra Costa Canal?

10 DR. KAVANAUGH: I believe I just included one of
11 the Contra Costa plants in that chart. I have the
12 Bollman and the Randall-Bold.

13 MR. MADDOW: How about the City of Antioch, or the
14 City of Pittsburg, or the City of Martinez, or the plant
15 at Bay Point owned by a private company?

16 DR. KAVANAUGH: I did not include those.

17 MR. MADDOW: You don't have any familiarity with
18 their flexibility to deal with increased levels of DOC
19 and turbidity?

20 DR. KAVANAUGH: No, I don't.

21 MR. MADDOW: We talked a little bit about enhanced
22 coagulation as being one of the issues that water
23 treatment plants need to deal with. Are there any other
24 consequences from the standpoint of design and operation
25 of the water treatment plant that go along with enhanced

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1 coagulation?

2 DR. KAVANAUGH: The use of enhanced coagulation
3 would lead to an increase in the coagulant dose. It
4 also, obviously, produces a greater amount of sludge.

5 MR. MADDOW: How about the need to adjust pH?

6 DR. KAVANAUGH: pH adjustment is also a part of it,
7 yes.

8 MR. MADDOW: What does that typically entail,
9 Dr. Kavanaugh?

10 DR. KAVANAUGH: Typically, it requires the addition
11 of a base such as lime at the termination of the
12 treatment plant to balance the pH prior to -- to dis --
13 to entering the distribution system.

14 MR. MADDOW: And does it ever have any impact in
15 the terms of the codings that are used on basins within a
16 treatment plant train?

17 DR. KAVANAUGH: It might if you had a water that
18 had substantial pH reduction due to this use of the
19 higher doses.

20 MR. MADDOW: And how about pH adjustment at the end
21 of the process?

22 DR. KAVANAUGH: That's what I was referring to with
23 respect to the addition of lime.

24 MR. MADDOW: So there would be -- in order to lower
25 pH you would add an acid, correct?

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1 DR. KAVANAUGH: Well, it depends on how you're
2 going to operate your plant. But, if you wish to operate
3 your plant at a lower pH and you're using ozone you would
4 likely add some acid. Of course, the coagulant is an
5 acid as well and it lowers the pH. So -- but it depends
6 on what your decision is regarding your outgoing pH for
7 the operation of the treatment plant.

8 MR. MADDOW: And then in order to adjust the pH
9 upward, to raise the pH you're talking about adding lime.
10 Is lime typically used in small to moderately sized
11 treatment plants to raise the pH?

12 DR. KAVANAUGH: Well, it's my opinion -- you're two
13 options are lime or sodium hydroxide. And sodium
14 hydroxide is used by some plants. That adds the addition
15 of sodium, which is not necessarily desirable.

16 MR. MADDOW: So the enhanced coagulation to the
17 extent that it could also involve pH adjustment could
18 also lead to issues relating to the use of sodium
19 hydroxide, or some other base product to adjust the pH;
20 is that correct?

21 DR. KAVANAUGH: Possibly, yes.

22 MR. MADDOW: And greater sludge volume you said
23 that's another implication of these treatment techniques?

24 DR. KAVANAUGH: Well, again, one has to look at the
25 doses. I mean if Bollen is currently running at 30 then

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1 that might be sufficient to meet the enhanced coagulation
2 requirements. But, certainly, if you have to add more
3 coagulant you would increase your sludge, yes.

4 MR. MADDOW: Mr. Roberts took you through a whole
5 series of questions in regard to running averages, et
6 cetera. And I don't intend to repeat that, but I do have
7 one question that I believe follows on from your rebuttal
8 testimony regarding the EPA regulations and the dialogue
9 you just engaged in with Mr. Roberts. It has to do with
10 timing and your professional judgment as to what should
11 be projected with regard to water quality protection,
12 drinking water quality protection as we approach the time
13 that this proposed Delta Wetlands project would be
14 implemented.

15 If we presume for the moment that construction
16 would start, let's say, three to five years from now,
17 something in that range. And if we accept the statements
18 that have been made -- I'll just generalize and say a
19 couple of years of construction period, something like
20 that. I guess we would be talking about sometime in the
21 2000 to 2003 time frame for initial operation of the
22 Delta Wetlands Project.

23 Is that a fair assumption in your opinion?

24 DR. KAVANAUGH: I think so.

25 MR. MADDOW: Given the uncertainty about the

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1 regulatory process to which you just testified, and given
2 these developing areas of health affects, et cetera, that
3 you discussed with Mr. Roberts, I'm interested in how you
4 would recommend that this Board condition any permit that
5 it might issue in order to assure that there will be
6 water quality protection in the face of this evolving
7 regulatory scene.

8 In particular, just taking, for example, the
9 question of monthly numbers versus quarterly running
10 averages, if it should turn out that the EPA moves to a
11 standard based upon monthly numbers because of some
12 health effect research that's done, how would you see
13 this Board conditioning a water rights permit related to
14 the drinking water constituents that might be of concern
15 that relate to the Delta Wetlands Project?

16 DR. KAVANAUGH: Well, that's a long and complicated
17 question --

18 MR. MADDOW: I understand. I can break it down if
19 you would like.

20 DR. KAVANAUGH: -- but I think I understand what
21 you're asking me to do, so without forcing you to
22 painfully go through breaking it down why don't I try to
23 answer it. I think the key here is -- you've raised a
24 hypothetical which is: Would the future standards be
25 based on a monthly sample, or a monthly average?

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1 I question whether that will be the case for a
2 whole range of reasons, cost associated with monitoring,
3 inadequacies of analytical techniques, uncertainties
4 associated with disinfection by-products that we
5 currently don't know, I think that some kind of a
6 sampling frequency, perhaps, greater than quarterly
7 running average, but certainly there's going to be a
8 running average is the likely compliance component of the
9 Stage II Regulations.

10 So I would disagree with your hypothetical. But
11 if you are going to impose a hypothetical requirement for
12 a single-month average, and you were going to state that
13 if the DOC at the export waters exceeds some number, you
14 always have to say it exceeds some number in that one
15 month period, then I think you have a different problem.

16 And I don't have a concrete answer to your
17 question beyond the fact that you would have to sit down
18 and evaluate what that would mean in terms of the ability
19 to discharge off of the island. And you would have to
20 account for mixing. You would have to account for
21 whatever the sampling frequency might, ultimately, be.

22 In my opinion, I think that the Stage II
23 requirements are likely to be lower than the Stage I.
24 How much lower I think is a very difficult issue to
25 predict. And the primary reason for this is the concern

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1 over microbiological quality. Because as you know what
2 we have in front of us is a balancing act between
3 disinfection by-products and microbial quality.

4 And so I think that that's an important factor
5 to consider in the context of the question you've asked
6 me. I would -- I would recommend that the approach to
7 the monitoring and the constraints, discharge
8 requirements, whatever you want to call it on the
9 operation of the Delta Wetlands Project be determined
10 based on a reasonable compliance monitoring approach and
11 not on an individual point in time.

12 We've seen how much variability you have in a
13 natural system with respect to DOC. I think the only way
14 that is appropriate to address this issue is to use
15 average values and to use some appropriate average value.
16 And I admit that's a question that should be -- should be
17 a key part of the final water rights, should be some
18 appropriate average.

19 MR. MADDOW: Dr. Kavanaugh, you've been consistent
20 in criticizing the Contra Costa Exhibit which uses, as
21 you've described it "spikes" in describing the DOC in the
22 water which would be pumped on to the Delta Wetlands
23 islands. And you have been consistent in saying that
24 Delta Wetlands should be evaluated from the standpoint of
25 long-term averages as opposed to shorter periods of

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1 evaluations.

2 My concern is with the regulatory process that
3 the water utilities are facing. To the extent that the
4 water utilities are required to comply with regulations
5 that are based on spiked conditions as opposed to average
6 conditions, wouldn't the appropriate technique that this
7 Board would use in conditioning the Delta Wetlands permit
8 be to narrow the range of permitted degradation in the
9 term that you discussed with Mr. Nomellini a few minutes
10 ago?

11 DR. KAVANAUGH: Well, a key part of your question,
12 I believe, is the issue of spikes. And as I have tried
13 to point out, certainly, spikes have to be taken into
14 account in terms of evaluating one option versus another.
15 But I believe that a statistical approach based on some
16 average values is a more appropriate approach. And it's
17 also consistent, I believe, with the regulatory
18 compliance approach that is imposed on water utilities.

19 MR. MADDOW: To the extent that your view of what
20 the regulatory compliance approach will be is not
21 accurate to the extent that the regulatory compliance
22 approach is going to be based on shorter evaluation
23 periods, wouldn't a more protective term along the lines
24 of what you discussed with Mr. Nomellini be the
25 appropriate regulatory measure?

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1 DR. KAVANAUGH: Well, when you say "more
2 protective" I'm not sure what you're comparing it to. So
3 I have some difficulty in answering your question.

4 MR. MADDOW: Thank you, Dr. Kavanaugh.

5 HEARING OFFICER STUBCHAER: Anyone else? Staff?
6 Mr. Canaday.

7 ----oOo----

8 REBUTTAL CROSS-EXAMINATION OF DELTA WETLANDS PROPERTIES

9 BY STAFF

10 MR. CANADAY: Good morning, Dr. Kavanaugh.

11 DR. KAVANAUGH: Mr. Canaday.

12 MR. CANADAY: I asked this question of Dr. Horne
13 yesterday and I'd like to get your opinion, because it is
14 related to both of your rebuttal testimonies.

15 It's in the form of a hypothetical, but if you
16 were going to manage the storage islands as storage
17 islands, and we do have concern about organic loading --

18 DR. KAVANAUGH: Yes.

19 MR. CANADAY: -- would you try to be growing
20 seasonal wetlands in conjunction with that operation as a
21 storage item?

22 DR. KAVANAUGH: I'm sorry. I don't think --

23 MR. CANADAY: Let me pose a hypothetical. The
24 project empties in let's say September.

25 DR. KAVANAUGH: I see.

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1 MR. CANADAY: And you now take on -- September or
2 August. And you take a water now to grow -- shallow
3 flooding islands to grow vegetation and shallow flooded
4 wetlands during the winter period. But then, of course,
5 because the object of the project is water storage then
6 you will fill that project when freshets come according
7 to the rules of whatever permit is permitted.

8 DR. KAVANAUGH: Yes. Yes.

9 MR. CANADAY: While the potential loading may be
10 small, nevertheless, it is a concern that you've heard
11 and have been crossed on --

12 DR. KAVANAUGH: Yes.

13 MR. CANADAY: -- so the simple question is: If you
14 were going to operate that project as a water storage
15 project and supply, trying to mix this kind of duality of
16 benefits, would you or would you not try to attempt to do
17 that?

18 DR. KAVANAUGH: I did not hear Dr. Horne's
19 testimony, but I think I would be inclined not to operate
20 both functions. I would try to focus exclusively on
21 storage on those two islands.

22 MR. CANADAY: Okay. Thank you.

23 HEARING OFFICER STUBCHAER: Mr. Sutton, or --

24 MS. LEIDIGH: We don't have any.

25 HEARING OFFICER STUBCHAER: No other questions.

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1 Mr. Brown?

2 MEMBER BROWN: No, sir.

3 HEARING OFFICER STUBCHAER: Okay. That concludes
4 the cross-examination on Dr. Kavanaugh. Dr. Kavanaugh,
5 thank you very much.

6 DR. KAVANAUGH: Thank you.

7 HEARING OFFICER STUBCHAER: Now, we will go to the
8 objected to testimony from yesterday in rebuttal --
9 cross.

10 Mr. Nelson, have you worked out this order of
11 proceeding with the Fish and Game?

12 MR. NELSON: Yes. Mr. Shaul is going to explain
13 what his calculation was. And then we will turn it over
14 for cross-examination --

15 HEARING OFFICER STUBCHAER: Fine.

16 MR. NELSON: -- after he's done explaining his
17 calculation.

18 HEARING OFFICER STUBCHAER: All right. Good
19 morning.

20 ----oOo----

21 REBUTTAL TESTIMONY OF DELTA WETLANDS PROPERTIES

22 BY JOSEPH NELSON

23 MR. NELSON: Mr. Shaul, can you describe the DFG
24 winter-run entrainment index that you were asked to
25 calculate yesterday.

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1 MR. SHAUL: Yes, I'll describe that. First of all
2 I wanted to discuss -- kind of put it in perspective of
3 the analysis that we did in the EIR/EIS and in the
4 biological assessment for winter-run salmon.

5 And in that -- in that analysis for winter-run
6 we used what we call a mortality index. And that
7 mortality index basically was based on chinook salmon
8 migrating through the Delta. And those salmon enter --
9 the winter-run chinook salmon enter in the Sacramento
10 River. And it was based on information from the Fish and
11 Wildlife Service where they enter the Sacramento River
12 and they move with the flow splits into this -- this is a
13 schematic of the Delta and also a schematic of the Delta
14 Move Model.

15 And some of the salmon moves through the Delta
16 Cross-Channel and the Georgiana Slough and enter what's
17 called the Mokelumne River Box, which is shaded. And
18 those -- that -- from the Delta Move Model we had an
19 entrainment index --

20 MS. LEIDIGH: Mr. Shaul, would you just identify
21 the figure so that we know on the record --

22 MR. SHAUL: Yes. This figure is from Appendix A of
23 the biological assessment, Figure 2.

24 MS. LEIDIGH: Thanks.

25 MR. SHAUL: So that information was then correlated

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1 with actual mortality data for field studies of fallen
2 chinook salmon. And we developed a regression equation.
3 And then that equation was used with several other
4 equations to develop a mortality index for those
5 documents.

6 There was concern, subsequently -- that model
7 was developed, too, under the State -- for the State
8 Water Board and for the Army Corp of Engineers. And it
9 was extensively reviewed and it was felt by National
10 Marine Fishery Service, Fish and Wildlife Service, and
11 Fish and Game to be the best available tool at that time
12 to evaluate impacts on chinook salmon entering on the
13 Sacramento River.

14 Subsequently, there were concerns by Fish and
15 Game that the model did not address impact -- potential
16 impacts to rearing juvenile salmon, and that model
17 addressed impacts to migrating salmon. And Fish and Game
18 requested additional information, additional analysis
19 which led to the development of what Fish and Game is
20 calling the winter-run entrainment index.

21 The entrainment index, as I discussed yesterday,
22 is probably better characterized as a habitat condition
23 index, rather than an entrainment index. It really is a
24 reflection of the flow conditions in these four -- four
25 shaded boxes shown here. So it uses the entrainment --

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1 the Delta Move Model provides an estimate of the
2 percentage entrained from each one of these boxes.

3 And for each box it runs independently. And so
4 it has -- it can have a value from 0 to 100 percent for
5 each box. So then what I did to calculate the
6 entrainment index that I'm going to talk about today, is
7 to take that value for each box, divide it by 4 so that I
8 would have a total of a hundred -- a potential total of
9 100 percent. And then add those four boxes together.
10 And essentially -- then for each month, I did that for
11 each month.

12 And then for each month that value was weighted
13 for the occurrence of the chinook salmon. And initially
14 in the biological opinion there was -- or actually, the M
15 Salmon Model there was a distribution used. And then,
16 subsequently, for this analysis that we completed over
17 last evening, we used the distribution that was in the
18 Fish and Game biological opinion, which is a slightly
19 different distribution, but it's basically the same kind
20 of pattern.

21 For the month of March instead of 39 percent
22 that was in the M Salmon, it was 49 percent in this
23 evaluation that I'm discussing today. So anyway --
24 anyway that result then was weighted by those monthly
25 distributions. And the first thing we got was an annual

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1 index by summary, the weighed monthly indices.

2 MR. NELSON: Mr. Shaul, is this a new graph that
3 you produced was that the first step of your calculation?

4 MR. SHAUL: Yes.

5 MR. NELSON: We've got a set of graphs that steps
6 through his calculations. We'd like to submit it as a
7 single exhibit instead of going through the process every
8 time he goes through, this steps up each portion of his
9 calculation. We are at number -- Delta Wetlands Exhibit
10 Number 70 --

11 MR. SUTTON: 75.

12 MS. MURRAY: Can I just say that -- that I do
13 object. Yesterday we talked about Mr. Shaul getting
14 together with Jim Starr, making sure we had the right
15 numbers creating the new Figure 7 and the new Figure 12.

16 We never agreed that he would, once again, run
17 through his model; once again, enter new exhibits. His
18 presentation today was to be very brief to just put up
19 the new Figure 7 and 12. This is all news to us.

20 MR. SHAUL: This is actually -- I'm explaining how
21 you get to 7 and 12. And the final figure is Figure 7 --
22 or, actually, Figure 12 in this case.

23 HEARING OFFICER STUBCHAER: I think for purpose of
24 illustration we'll see them. And then -- I understand
25 your concern, but let's see what they -- what they look

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1 like. And then we'll rule on their admissibility later.

2 MS. MURRAY: Okay. Thank you.

3 MR. SHAUL: So this is the annual index. And --

4 HEARING OFFICER STUBCHAER: Excuse me, Mr. Nelson?

5 MR. NELSON: Yes.

6 HEARING OFFICER STUBCHAER: Are all these
7 exhibits -- or one exhibit? Are you going to have an A
8 and B and a C within it so that we can --

9 MR. NELSON: Yes. We'll have each one designated
10 as A, B, C, D.

11 HEARING OFFICER STUBCHAER: All right. So this is
12 A?

13 MR. NELSON: So this will be DW 75-A, DFG
14 Winter-run Entrainment Index.

15 Go ahead.

16 MR. SHAUL: The annual index reflects the
17 variable -- or the monthly distribution for winter-run
18 and also the variable operations of the Delta Wetlands
19 Project, because Delta Wetlands Project does not operate
20 continuously. It only operates when there is
21 essentially -- diversion when there's water available and
22 capacity in the islands. And it discharges when there's
23 storage on the islands and export capacity and the rules
24 allow the operations.

25 So Delta Wetlands operations may occur during

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1 one to two months during the winter-run presence and
2 that's what is reflected here. And you can see that the
3 ESA -- and there are impacts under both the CESA and the
4 ESA operation rules. And the impacts are greater under
5 the ESA rules, slightly above what the no-project are.

6 The next step was we wanted to -- Fish and Game
7 wanted to focus on one month and to look at what the
8 impacts would be, in that month was March. And I'd like
9 point out here the rules -- this is based on the
10 simulation for the March 20th evaluation -- or March 25th
11 evaluation which was DW 5 and it was done by Fish and
12 Game for this Board.

13 HEARING OFFICER STUBCHAER: And this is B?

14 MR. SHAUL: Right. So under the scenario that we
15 had then, the rules we had then there was no discharge,
16 or export allowed during the month of March under the
17 CESA Operation Rules. So this is for the month of March.
18 And you see that under the CESA it's pretty much
19 identical to the no-project. And you see some years
20 where there were impacts under the -- under the ESA
21 Rules.

22 So this focuses -- the purpose here is to focus
23 on the month of March. What you lose by focusing on one
24 month is you lose the perspective relative to the
25 frequency of the operations of Delta Wetlands during the

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1 year, and also some perspective on the currents of the
2 winter-run throughout the year.

3 The next thing we did was we wanted to focus so
4 that we could better see where the impacts were occurring
5 or what the magnitude of those impacts were, focus on the
6 ten cases, go ahead and go to the next one,
7 on the ten years, or ten Marchs that were simulated where
8 the impact of ESA operations was greatest. So the
9 difference between --

10 HEARING OFFICER STUBCHAER: Just give it the
11 letter, this would be C.

12 MR. SHAUL: What's that?

13 HEARING OFFICER STUBCHAER: Is this C?

14 MR. NELSON: There is DW 75-C.

15 MR. SHAUL: DW 75-C.

16 HEARING OFFICER STUBCHAER: You see and understand
17 the written record has to have some identification.

18 MR. SHAUL: Right. So the three bars -- and the
19 first is the no-project bar. The second bar is the
20 impact, or the index for the -- for the ESA. And the
21 third bar is operations of Delta -- the total Delta index
22 for under CESA. And the difference between the bars,
23 between the ESA bar and the no-project bar is the impact
24 resulting from Delta Wetlands operations.

25 And in 1932 is when the greatest difference

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1 occurred between the index for the ESA operations, the
2 Delta Wetlands Operation under ESA and the no-project
3 operation. So what we have here is -- what we're trying
4 to focus on is we're trying to make it clear what the
5 project impacts are. And what you lose is you lose
6 some -- what I discussed previously, plus you're losing
7 the effects of the variable. The hydrology that is
8 occurring in March.

9 HEARING OFFICER STUBCHAER: Are there ever any
10 years when it's positive rather than negative?

11 MR. SHAUL: That the project has a positive effect
12 in March?

13 HEARING OFFICER STUBCHAER: Yes.

14 MR. SHAUL: There are some years, but it's very
15 small. And that would occur when there is no-project
16 operations and because -- depending on how the other
17 projects operate when there's some foregone ag diversions
18 then you could get some slight positive. Or if there's
19 some discharge of water for environmental purposes under
20 CESA or ESA, then you could get some positive.

21 HEARING OFFICER STUBCHAER: The reason I asked is
22 it doesn't say whether the changes are positive or
23 negative in the title.

24 MR. SHAUL: Well, this one is not the changes.
25 This is actually a comparison in the seasons. So the

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1 changes are the differences in the height of the bar.

2 HEARING OFFICER STUBCHAER: I understand. But
3 they're arranged, I think, according to the change in the
4 heights of the bars.

5 MR. SHAUL: I see. Right. Right. The largest
6 changes we're talking about are to the adverse, right,
7 not to the positive. But the positive ones would be much
8 smaller. If you ranked the positive you wouldn't see
9 much difference. So then what the -- go to the next
10 figure, please.

11 MR. NELSON: Would you identify this?

12 MR. SHAUL: This is DW 75-D?

13 MR. NELSON: D.

14 MR. SHAUL: Is that correct?

15 MR. NELSON: Yes.

16 MR. SHAUL: So DW 75-D this is, essentially,
17 Figure 12, or the revised Figure 12 from the CESA
18 biological opinion. And the top figure is the one I want
19 to focus on. And the left axes is labeled winter-run
20 salmon entrainment index, but I've handwritten in
21 there -- actually, what that is it's the change from the
22 no-project winter-run entrainment index.

23 If you would flip back to the previous figure.
24 So looking at 1932, again, if you look at the no-project
25 bar and you look at the ESA bar and you look at the

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1 difference there, then -- and then flip to the next
2 figure, that difference is what is reflected by the first
3 bar on the left in Figure DW 75-D. So basically the
4 purpose here is really to focus on the differences
5 between the operating scenarios and to clearly show that
6 there are differences between the ESA criteria and CESA
7 criteria. What you lose here is you lose what I talked
8 about previously, but in addition you lose the magnitude
9 relative to the no-project conditions. That concludes my
10 explanation.

11 MR. NELSON: Can I ask a couple more clarifying
12 questions. Mr. Shaul, if you look at that graph up
13 there, and you'll see on the Y-axis for winter-run the
14 changes for no-project winter-run salmon you see it goes
15 from zero to almost seven. What is the total value for
16 the Y-axis there?

17 MR. SHAUL: Under these conditions the way that
18 Fish and Game had -- had me do this and did it themselves
19 were they did not weigh each of the boxes. So that if
20 you would -- you had a total value on the axis it would
21 go from 0 to 400 percent, because it's doesn't weight
22 each one of the boxes. It just puts the totals -- totals
23 of the values of the boxes under the no-project and then
24 subtracts that total for the ESA and the CESA so that the
25 total index potential is 400 percent. So that seven is

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1 relative to that.

2 MR. NELSON: Now, looking down to the Delta
3 smelt --

4 HEARING OFFICER STUBCHAER: Just a moment.

5 MS. MURRAY: And I do have an objection about
6 continuing on and on with testimony far beyond what we
7 agreed to. And he has made his explanation of the
8 graphs. Now they want to add, yet, even more testimony.
9 When is this going to stop?

10 HEARING OFFICER STUBCHAER: It seems to me that
11 explaining that this 7 is relative to 400 is significant
12 in it helps us to evaluate. And is this a graph that
13 Fish and Game is -- is this the chart that Fish and Game
14 agreed to?

15 MS. MURRAY: This is Figure 12 from our biological
16 opinion.

17 HEARING OFFICER STUBCHAER: Right.

18 MR. NELSON: The revised one you're talking about?

19 MS. MURRAY: The revised one.

20 HEARING OFFICER STUBCHAER: Your objection is
21 noted. I'm going to permit the questioning to proceed.

22 MR. NELSON: Mr. Shaul, now looking down to the
23 changes from no-project to Delta smelt, it goes from 0 to
24 2. Is the Y-axis on that index 400 or 100?

25 MR. SHAUL: On that index it would be 100, because

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1 in the Delta smelt evaluation the boxes are weighted
2 based on geographical distribution.

3 MR. NELSON: Okay.

4 MR. SHAUL: Assumed geographical distribution.

5 MR. NELSON: Can we just for clarification
6 purposes, DW 75-C which is the one you put up right
7 before which shows the no-project ESA and CESA, and shows
8 the differences -- the change from the no-project, is the
9 Y-axis there 100 or 400?

10 MR. SHAUL: The Y-axis is 100.

11 MR. NELSON: Thank you. If you can put back up
12 DW 75-D, I have one other question. Looking at the year
13 1932, which is the first one that shows a value of 7
14 there, that is a -- you -- when you ran the model you've
15 already stated that this is calculated on data from the
16 March 25th memorandum. Is that correct?

17 MR. SHAUL: That's correct.

18 MR. NELSON: And you also stated that there were no
19 discharges allowed in March under that run that was
20 required by Fish -- requested by Fish and Game; is that
21 correct?

22 MR. SHAUL: Right. Under the rules we received
23 from Fish and Game from the State Board the rules did not
24 allow Delta Wetlands to discharge during March.

25 MR. NELSON: And isn't it true that the Fish and

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1 Game biological opinions do not -- do allow discharges in
2 March during that time period?

3 MR. SHAUL: Yes, that's true.

4 MR. NELSON: Now, when you ran the data in that
5 March 25th memorandum, isn't it true that Delta Wetlands
6 under Table 2-A of DW 5, isn't it true that Delta
7 Wetlands did not divert in March of 1932?

8 MR. SHAUL: I'd have to see it.

9 MR. NELSON: Yeah.

10 MR. SHAUL: Yes, that's true.

11 MR. NELSON: Now, then, look at the total end of
12 the month's storage for the ESA condition in DW 5 --

13 HEARING OFFICER STUBCHAER: I think this is
14 getting --

15 MR. NELSON: Well, actually, can I explain? I'll
16 just ask the question:

17 Mr. Shaul, isn't it true that Delta Wetlands
18 under the Fish and Game biological opinion could have
19 diverted -- could have discharged -- since there were no
20 diversions in 1932 the impacts that would have been shown
21 in this value would only have been discharges from the
22 island; isn't that true?

23 MR. SHAUL: Yes, that's true.

24 MR. NELSON: And isn't it --

25 MR. SHAUL: Let me -- it's not completely true

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1 because there are some antecedent effects, but it's
2 basically true.

3 MR. NELSON: Basically true that this is
4 essentially showing that that's discharges in March 1932,
5 no diversions?

6 MR. SHAUL: Yes.

7 MR. NELSON: And isn't it true that under the CESA
8 biological opinion --

9 HEARING OFFICER STUBCHAER: Excuse me. Ms. Murray.

10 MS. MURRAY: I do have a standing objection to this
11 going far beyond the scope of our agreement.

12 HEARING OFFICER STUBCHAER: Yes. This -- when you
13 start talk about what might have been done under the
14 operations for given months, I think that is beyond the
15 scope that was agreed to yesterday. And I think you
16 could cover that in your closing brief.

17 MR. NELSON: Can I explain the reason, because
18 the --

19 MS. MURRAY: No.

20 MR. NELSON: Let me explain what I'm trying to
21 address here is that this calculation does not -- the
22 CESA bar on 1932 is incorrect. And that is what I'm
23 trying to have Mr. Shaul explain.

24 MS. MURRAY: And all I'm saying is his testimony --
25 that is incorrect. We do not believe that it's

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1 incorrect. And we met with Mr. Shaul, we talked to him
2 last night. And we agreed to this. So all I'm saying is
3 that this is --

4 HEARING OFFICER STUBCHAER: There hasn't been --
5 well, I know there's been previous testimony and exhibits
6 on what is permitted in what month. And I'll ask,
7 Ms. Leidigh, isn't this an appropriate thing to ask in
8 the closing?

9 MS. LEIDIGH: Yes.

10 HEARING OFFICER STUBCHAER: It's not new testimony.
11 It's evidence that's already in the record that you could
12 refer to in your closing argument I would think.

13 MS. LEIDIGH: That's correct. I think this can be
14 pointed out in closing arguments that there's a
15 comparison among testimony. And that you're arguing a
16 particular point. I would like to add, also, that in
17 general, I don't think that we need to ask leading
18 questions of Mr. Shaul. Just ask that you ask whatever
19 questions you have directly.

20 MR. NELSON: Okay. I just have one final question
21 for Mr. Shaul. Even though you -- did you agree with the
22 Figure 12 modeling that you created?

23 MS. MURRAY: And, again, I'd -- one thing, that's a
24 leading question and beyond the scope --

25 HEARING OFFICER STUBCHAER: Well, I think that

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1 question is okay.

2 MR. SHAUL: Yeah. I think that the modeling that
3 we did with Fish and Game we came to an agreement and
4 we're definitely on the same page. I think that's the
5 question.

6 MR. NELSON: You agree with the values that were
7 created. Do you agree with the modeling technique that
8 was used to create these values?

9 MR. SHAUL: I guess I'm not quite sure what you're
10 asking me I agree with.

11 MR. NELSON: Do you agree with the use of the
12 winter-run salmon entrainment index?

13 MR. SHAUL: For?

14 MR. NELSON: For analyzing salmon mortality, or
15 affects of Delta Wetlands Project on winter-run salmon?
16 Do you agree with Fish and Game's use of this index
17 instead of your index?

18 MR. SHAUL: Well, I'm not sure that they're saying
19 this index. When -- as I mentioned when I started out
20 that the index is probably more appropriately called a
21 habitat condition index. It's an index that's -- I mean,
22 it's all right to look at. It's not necessarily -- it
23 doesn't tell you what exactly happens to chinook salmon.
24 But it's an all right index as far as looking at
25 conditions in the Delta.

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1 Because I mean there's a lot of information
2 other than just this index. If you were just to use this
3 index, then I would say that is basically inappropriate.
4 But if you were to use the rest of the information and
5 that this index just gave you something else, gave you
6 another level of comfort, then it's probably just all
7 right to just look at.

8 MR. NELSON: Thank you. I have no other questions.

9 HEARING OFFICER STUBCHAER: All right.

10 MS. BRENNER: Ma'am Reporter, would you please mark
11 that portion of the testimony. Thanks.

12 HEARING OFFICER STUBCHAER: All right. Ms. Murray.

13 MS. MURRAY: We would like to request the morning
14 break should be taken now before we do our
15 cross-examination to evaluate all this..

16 HEARING OFFICER STUBCHAER: Were you prompted to
17 ask for it now, because we were going to do it now for
18 our own scheduling purposes?

19 MS. MURRAY: Oh.

20 HEARING OFFICER STUBCHAER: Mr. Sutton. Just a
21 moment.

22 MR. SUTTON: Can we just get a clarification from
23 Delta Wetlands attorneys, there are three more pages
24 attached onto this --

25 HEARING OFFICER STUBCHAER: Right --

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1 MR. SUTTON: -- Exhibit 75 that were not discussed.

2 Is that --

3 MR. NELSON: Those are the February calculations
4 which Mr. Shaul said he wasn't going to discuss formally.
5 But that's the calculation process he went through to
6 reach the February portions of the request which is
7 Figure 7 of Figure 12. But we would have those labeled
8 as DW -- just following with that, it would be 75-F,
9 excuse me -- 75-E, for the first; 75-F and 75-G.

10 MR. SUTTON: Barbara, I think we need a
11 clarification, because if he's not testifying to it and
12 it hasn't been discussed --

13 HEARING OFFICER STUBCHAER: That's a good point. I
14 noticed the same thing. There's been no discussion of
15 those last three pages, should we just remove them from
16 the exhibit and --

17 MR. NELSON: We'll just remove it.

18 HEARING OFFICER STUBCHAER: All right. Why don't
19 we just do that then.

20 MS. MURRAY: Yeah. We'll probably ask a question
21 about 75-G, which is our revised Figure 7.

22 HEARING OFFICER STUBCHAER: But it's not part of
23 their submittal, so --

24 MS. MURRAY: That was part of what we did agree to
25 yesterday.

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1 MR. NELSON: 75-G is the last -- Mr. Shaul, could
2 you -- could we just have Mr. Shaul identify them --

3 HEARING OFFICER STUBCHAER: Yes.

4 MR. NELSON: -- as the calculations he created.
5 And then they can cross on that.

6 HEARING OFFICER STUBCHAER: Yes.

7 MR. NELSON: Mr. Shaul, did you create the three
8 February charts, graphs that are entitled first one, DFG
9 winter-run index, February; the second one, DFG
10 winter-run entrainment index years with ten largest ESA
11 changes in February; and the third one which is the
12 February revised Figure 7?

13 MR. SHAUL: Yes, I created -- well, I created the
14 first two figures. And then I recreated a figure like
15 this, but this figure is actually from Fish and Game.
16 Those are studies --

17 HEARING OFFICER STUBCHAER: When you say "this"
18 please, tell us what "this is."

19 MR. SHAUL: Excuse me. The Figure DW 75 --

20 MR. NELSON: G.

21 MR. SHAUL: -- G, is essentially the revised Figure
22 7 from the CESA biological opinion. And the winter
23 chinook salmon part is the part that when we redid the
24 numbers we came to the same result, Fish and Game and
25 myself.

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1 HEARING OFFICER STUBCHAER: Thanks.

2 MR. NELSON: So once, again, I'll identify those as
3 the first one being 75-E that's the 70-years Entrainment
4 Index for February; 75-F which is the ten largest ESA
5 changes in February; and 75-G which is the revised Figure
6 7.

7 HEARING OFFICER STUBCHAER: All right. Thank you.
8 We'll break until 10:30.

9 (Recess taken from 10:18 a.m. to 10:35 a.m.)

10 HEARING OFFICER STUBCHAER: All right. We'll
11 reconvene the hearing. And who wishes to cross-examine
12 Mr. Shaul besides Fish and Game, anyone? All right.

13 MS. LEIDIGH: East Bay MUD.

14 HEARING OFFICER STUBCHAER: Anyone else? I can't
15 see through Ms. Murray. Okay. Come up,
16 Mr. Etheridge.

17 ----oOo----

18 REBUTTAL CROSS-EXAMINATION OF DELTA WETLANDS PROPERTIES

19 BY EAST BAY MUNICIPAL UTILITIES DISTRICT

20 BY FRED ETHERIDGE

21 MR. ETHERIDGE: Thank you, Mr. Stubchaer. For the
22 record I'm Fred Etheridge for East Bay MUD. I just have
23 a few questions for Mr. Shaul.

24 When you began your testimony this morning
25 explaining the steps you took in your analysis, you

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1 stated that you assumed that fish move with the flow. Is
2 that correct?

3 MR. SHAUL: I stated that in the Mortality Model
4 there's an assumption that the flow split at the Delta
5 Cross Channel and Georgiana Slough off the Sacramento
6 River at that flow split the juvenile fish moving down
7 the Sacramento River are assumed to move with the flow.

8 MR. ETHERIDGE: What is meant by "flow"?

9 MR. SHAUL: With net flow divisions. So if the --
10 50 percent of the Sacramento River flows into the Delta
11 Cross Channel and Georgiana Slough then 50 percent of the
12 fish would be assumed to move with that flow.

13 MR. ETHERIDGE: Okay. Does that Mortality Model
14 take into account tidal influence?

15 MR. SHAUL: That -- okay. That gets a little more
16 complexed, but as far as the flow split it doesn't take
17 into account any tidal influence. Okay. But there's --
18 it's part of a model, there's a regression with the
19 entrainment index from the Mokelumne box. Well, the
20 entrainment index does take into account the effect of
21 tidal mixing on the movement of particles.

22 MR. ETHERIDGE: So does this stuff in the analysis
23 assume that fish are essentially particles moving with
24 the flow?

25 MR. SHAUL: It does not, no. It's merely -- in the

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1 case -- which model are you talking about, I guess?

2 MR. ETHERIDGE: The Mortality Model. You mentioned
3 there's that flow split.

4 MR. SHAUL: It doesn't at all. In the Mortality
5 Model it's a regression relationship between what's
6 represented -- the entrainment represents a flow
7 condition. And that flow condition is regressed with
8 actual survival of juvenile salmon released in the Delta
9 during the -- during the periods that that index is
10 calculated for.

11 So it's not -- it's not assuming that fish move
12 like particles at all. In that case it's actually a
13 regression relationship. And it's just an indication of
14 the potential effects, whether it's an entrainment
15 effect, a confusion effect, or whatever effect may cause
16 an elevated mortality, then that's what it's reflecting.
17 And it's not reflecting a movement as particles.

18 MR. ETHERIDGE: In looking at Delta Wetlands 75-C,
19 it's a bar graph, winter-run entrainment index. Does
20 that show, for example, in 1932 that there will be more
21 entrainment of winter-run chinook salmon under the BSA BO
22 than under the CESA BO?

23 MR. SHAUL: As I mentioned when I first started
24 discussing this entrainment index, it's probably -- and
25 even in my discussions with Mr. Yang yesterday about the

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1 index it's really an index of habitat conditions and not
2 an index of entrainment. And what it indicates here is
3 that -- by that bar on 32, the ESA bar is higher than the
4 no-project bar.

5 MR. ETHERIDGE: Right.

6 MR. SHAUL: It indicates that conditions would be
7 worse for -- or habitat conditions, or flow conditions,
8 more waters moving towards Delta diversions under the --
9 with the Delta Wetlands Project than without the Delta
10 Wetlands Project. And that may include some increased
11 entrainment. But it's just an entrainment -- it's not
12 strictly an entrainment index. You can't say that you're
13 going to get an increase of X percent of entrainment.
14 That's not what that's saying.

15 MR. ETHERIDGE: So if I understand your testimony,
16 it's more -- this entrainment index speaks more to
17 suitable habitat?

18 MR. SHAUL: To the conditions, as far as the
19 movement of the water towards the pumps and how that may
20 affect the movement of salmon because of flow cues.

21 MR. ETHERIDGE: So what that method of analysis
22 shows for 1932, for example, is that there would be worse
23 conditions under ESA than under CESA; isn't that correct?

24 MR. SHAUL: That's true in this simulation, because
25 in this simulation the CESA rules in March were more

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1 restrictive than ESA, because the CESA allowed neither
2 Delta Wetlands discharge or diversion. Whereas the ESA
3 rules allowed that. And during 1932 there was Delta
4 Wetlands discharge.

5 MR. ETHERIDGE: And does this same analysis show
6 that for 1949, 1957, 1971, 1989, 1987, 1959, 1937, 1929
7 that the ESA results in a worse -- worse entrainment
8 index result than the CESA?

9 MR. SHAUL: That's true. Yes.

10 MR. ETHERIDGE: Thank you. That's all the
11 questions I have.

12 HEARING OFFICER STUBCHAER: Ms. Murray.

13 ----oOo----

14 REBUTTAL CROSS-EXAMINATION OF DELTA WETLANDS PROPERTIES

15 BY THE DEPARTMENT OF FISH AND GAME

16 BY NANCEE MURRAY

17 MS. MURRAY: Good morning. Mr. Shaul, under
18 questioning by Mr. Nelson you indicated that the
19 winter-run entrainment index is a valuable tool for
20 evaluating habitat conditions in context with other
21 variables. Do you recall that?

22 MR. SHAUL: I indicated that it is another tool
23 that you can look at a broader range of conditions that
24 may affect chinook salmon survival in the Delta.

25 MS. MURRAY: And isn't it true that the Department

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1 of Fish and Game's biological opinion uses a qualitative
2 approach in conjunction with the winter-run entrainment
3 index, winter-run Mortality Model, Delta smelt
4 entrainment index, and other information such as changes
5 in Delta outflow?

6 MR. SHAUL: That's -- the way I understand the
7 biological opinion it's basically -- it's really all in a
8 qualitative approach in that this gives some quantitative
9 measure of the index of conditions that's applied to --
10 that's assumed to adversely affect the chinook salmon.
11 But it's really all more or less a qualitative approach.
12 This is a quantitative measure as an index and not really
13 a measure of entrainment and that with other information,
14 yes, is used.

15 MS. MURRAY: Okay. Mr. Shaul, you described the
16 Department's methodology for calculating the winter-run
17 entrainment index in DW Exhibit 74. Help us, again,
18 outline the difference between DFG's approach and the two
19 other approaches you outlined by answering a few
20 questions.

21 The Department used four regions of the Delta
22 rather than one in the case of the Mortality Model, or
23 two in the index displayed by Jones and Stokes for
24 Exhibit DW 5. Isn't that correct?

25 MR. SHAUL: The Department -- the entrainment index

1 uses four boxes, right.

2 MS. MURRAY: Rather than one used in the Mortality
3 Model?

4 MR. SHAUL: That's correct. But they had different
5 purposes, too.

6 MS. MURRAY: Okay. Is it your understanding that
7 DFG did that because it believed that the approach
8 provided a better overall picture of habitat quality in
9 the Delta as it related to hydrodynamic conditions?

10 MR. SHAUL: Yes, that's true. It's related to
11 overall hydrodynamic conditions in the Delta. The
12 approach provides a better index of the overall
13 hydrodynamic conditions, but not necessarily relative to
14 a given species. So you need to -- if you were just
15 looking at overall conditions -- when you start applying
16 it to species then there gets to be a lot more biological
17 assumptions.

18 MS. MURRAY: Okay. The Department also used
19 weighted occurrence data depicted in Figure 1 of its
20 biological opinion, which is different than that used by
21 Jones and Stokes. Isn't that true?

22 MR. SHAUL: I'm not sure what we're talking about
23 here yet.

24 MS. MURRAY: Well, you mentioned that -- earlier in
25 your rebuttal today that the in -- the percentages used

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1 by Jones and Stokes was slightly different than the
2 percentages used -- depicted in Figure 1.

3 MR. SHAUL: Oh, okay. The distribution, or the
4 occurrence of winter-run chinook salmon is slightly --
5 that we used in the March analysis.

6 MS. MURRAY: Overall, the Figure 1 distribution
7 Fish and Wildlife Agency agreed on and that the
8 Department of Fish and Game used in its biological
9 opinion, you used slightly different percentages in your
10 analysis, in the Draft EIR; isn't that correct?

11 MR. SHAUL: The percentages we used in the Draft
12 EIR/EIS were percentages that were from National Marine
13 Fishery Service. At that time we agreed on that that's
14 the percentages that's as good an estimate of what we had
15 of what the distribution was.

16 And it was even -- we did several analyses, too,
17 for that. It wasn't just a simple percentage that we did
18 for the EIR/EIS and the biological assessment. I
19 actually developed a model, because there was concern
20 that we were missing a change in distribution depending
21 on what kind of hydrologic conditions occurred upstream.

22 For instance, when you get high flows in
23 October/November you get a greater proportion of
24 winter-run moving downstream in the Delta and a greater
25 likelihood that you would have a higher proportion of

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1 salmon rearing in the Delta. So the actual distribution
2 used in the EIR/EIS and in the BA was dependent and it
3 varied from year to year -- each month varied depending
4 on the year depending on what happened in the previous
5 months. So it was a cumulative distribution that
6 actually was used in the analysis in the EIR/EIS and in
7 the BA.

8 MS. MURRAY: Okay.

9 MR. SHAUL: And that's discussed in the method
10 section of Appendix B of the BA.

11 MS. MURRAY: Yesterday in your rebuttal testimony
12 you stated that DFG more appropriately should have used
13 the percentage entrainment output directly from the Delta
14 Move Model for the four locations of the Delta. Does
15 that accurately summarize your point on that issue?

16 MR. SHAUL: That was relative to what was used to
17 create the figure previously. What happened was there
18 was just a confusion between what's called the M Salmon
19 Model. And Fish and Game was just pulling from four
20 columns, which they assumed to be the four boxes from the
21 D-30 Move Model adjusted for monthly occurrence of
22 winter-run chinook salmon. But in reality those four
23 columns were not that. So that's why I said it's more
24 appropriate that they use the four boxes from the D-30
25 Move Model.

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1 MS. MURRAY: Okay. And isn't it your understanding
2 that this use of those four boxes and those columns was
3 simply a misunderstanding between our staff and your
4 staff?

5 MR. SHAUL: Yes.

6 MS. MURRAY: Based on your review of the revised
7 Figure 7 and 12 prepared last night, is it your opinion
8 that the misunderstanding in DFG's use of model output
9 did not result in substantial changes in Figure 7 and 12
10 for winter-run that are currently in the Department's
11 biological opinion?

12 MR. SHAUL: That's true, yes.

13 MS. MURRAY: Okay. Did not result in substantial
14 changes.

15 MR. SHAUL: There were changes -- well, there were
16 pretty big changes in some of the years --

17 MS. MURRAY: Okay. Let's go through --

18 HEARING OFFICER STUBCHAER: Let him finish his
19 answer.

20 MS. MURRAY: Okay.

21 MR. SHAUL: If you were to just look at the picture
22 and hold it up and say, look at this picture and look at
23 this picture they basically give the same general feeling
24 about what the picture is for. But if you were to look
25 at the details then you would say, yeah, there are

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1 differences.

2 MS. MURRAY: Isn't it true that the winter-run
3 index in Figure 7 as revised last night depicts the same
4 10 years as Figure 7 in the draft -- in the Department of
5 Fish and Game's BO?

6 MR. SHAUL: Yes.

7 MS. MURRAY: Isn't it true that the winter-run
8 entrainment index in Figure 12 as revised last night
9 depicts the same 10 years as the Figure 12 in the
10 Department of Fish and Game biological opinion?

11 MR. SHAUL: Yes.

12 MS. MURRAY: Okay. So let's look at the -- at the
13 biological opinion, figure -- is this the revised or the
14 original?

15 MR. SHAUL: That's the revised.

16 MS. MURRAY: The revised. Let's look at the
17 original and then let's look at the revised.

18 MR. STARR: Hold on a second. That's not the
19 original, this is the revised one.

20 MS. MURRAY: Right. Okay. This is revised. And
21 then if you could --

22 MR. STARR: You mean overlay it?

23 MS. MURRAY: Yeah, I think that will show --

24 MR. STARR: The one we just put on -- this one here
25 is this exhibit.

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1 MS. MURRAY: So the top one is our original figure.

2 Is that correct?

3 MR. STARR: Yes. The scale is a little off, but --

4 HEARING OFFICER STUBCHAER: When you say top one --

5 MS. MURRAY: Well --

6 HEARING OFFICER STUBCHAER: -- you can't tell --

7 you're not referring to the top of the screen. You're

8 referring to the overlay.

9 MS. MURRAY: Yes.

10 HEARING OFFICER STUBCHAER: We can't tell what that

11 is.

12 MS. MURRAY: How about if you put those below each

13 other.

14 HEARING OFFICER STUBCHAER: I would say the overlay

15 is a good idea, but just offset it slightly from left to

16 right and then we'll say the one on the right is --

17 MR. STARR: Okay. The one on the right is the

18 original.

19 HEARING OFFICER STUBCHAER: Except the axes aren't

20 in line yet. There you go.

21 MS. MURRAY: So looking at the overlay, would you

22 agree that there is not a substantial change between the

23 original and the revised figures, the top? And we're not

24 looking at the Delta smelt. The winter-run salmon

25 entrainment index.

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1 MR. SHAUL: Well, as I said before: I would say if
2 you look at the details, there is a substantial change in
3 the bars. I mean some of the bars are cut almost 50
4 percent difference. But if you look at the general
5 picture and the trend of the relationship between the
6 CESA and the ESA, then -- and that's all you're looking
7 at, then they both show the same thing. There is a
8 difference between having a rule that doesn't allow any
9 diversion and discharge and not having the rule.

10 HEARING OFFICER STUBCHAER: Overlapping is better
11 than completely offset.

12 MS. LEIDIGH: Uh-huh.

13 MS. MURRAY: Is the index figure higher with the
14 revised that -- the -- Figure 7, does the revised
15 Figure 7 indicate higher entrainment?

16 MR. SHAUL: No, not necessarily, because --

17 MS. MURRAY: Let's look at --

18 MR. SHAUL: -- what you're looking -- remember,
19 what you're looking at here is differences, and the
20 relationship to what the no-project alternative is is no
21 longer there. So it's likely, although I didn't do that
22 comparison, that the -- if you put the actual indices up
23 there you would find that the indices themselves were
24 also larger. So that when you took the differences, of
25 course, the differences are going to be larger.

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1 So the relative -- relative to the no-project --
2 you know, when you look at them relative to what the
3 conditions are under the no-project alternative there's
4 probably none. You wouldn't see that necessarily if
5 there's an increase. I haven't looked at that. I don't
6 know what you would see. No, that's not necessarily the
7 truth.

8 MS. MURRAY: But you would agree that on this graph
9 the boxes -- the bars go higher in the revised graph?

10 MR. SHAUL: Oh, yeah, it's a difference.

11 MS. MURRAY: Okay.

12 MR. SHAUL: But the reason for that I'm not saying
13 what it is. So --

14 MS. MURRAY: Okay. Mr. Shaul, you as well as
15 others, such as Dr. Brown, testified that it may not be
16 appropriate mathematically to combine the indices for the
17 four Delta locations. Since DFG in the text of its
18 biological opinion compares the proposed project with the
19 no-project or base condition using the combined indices
20 for both conditions, doesn't that represent a reasonable
21 approach for describing percent changes from the
22 no-project condition?

23 MR. SHAUL: Okay. It gets to a couple issues, I
24 guess. As long as -- if you were just looking at
25 winter-run chinook salmon, or not even just winter. If

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1 you were looking at the indices themselves and you were
2 doing just one comparison and you were just developing a
3 habitat index for the Delta with the four boxes, and you
4 were -- the comparison you were just going to treat all
5 the boxes equally. And you added them up and you got
6 this index. And then you did another scenario. And you
7 added up those boxes for that scenario and got an index
8 and you compared the indices themselves, then in that
9 case it doesn't really matter too much whether there's --
10 the total index has a potential for 400 percent or
11 whether it can be 100 percent.

12 But it's more of a presentation kind of a -- I
13 don't know. I guess when you take the indices it's being
14 careful that you're not biasing the information that you
15 are showing in some way, because the reason -- the reason
16 I always bring it to a hundred percent, I guess, is --
17 for example, the Delta smelt index for one thing, is --

18 MS. MURRAY: Which combined the four boxes.

19 MR. SHAUL: -- there's two reasons for it really.
20 One is that when you do a difference and your axis, your
21 potential total index is 400 percent then your
22 differences also have to be put on that scale. But when
23 you take them out of context and then you just do a
24 difference and then you present it, and if you presented
25 one index that was based on the 400 percent and one index

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1 based on 100 percent you would get -- people that looked
2 at it would get a different picture of it.

3 MS. MURRAY: Right. But what we're saying is we
4 used the same combination for no-project that we used for
5 with project. So wouldn't that take out that difference
6 of 400 to 100, it's all the same for percent increases?

7 MR. SHAUL: In -- just looking at it strictly --

8 MS. MURRAY: Just looking at that.

9 MR. SHAUL: -- from that, that's true. But you
10 also -- it's essentially you never -- you never talk
11 about that it's based on a total potential index of 400
12 percent. So I mean it's just a statistical presentation.
13 It's fine as far as if you're just comparing it. But as
14 far as presentation, I don't personally like to do that.

15 And then the other problem is that on that same
16 page you have another index that's called the Delta smelt
17 index, or the Delta smelt entrainment index. That index
18 has -- is essentially weighted. The boxes are weighted
19 so that the total index could only be a hundred percent.
20 So if someone were to look at that page you'd have one
21 index that has a potential index of 400 percent; you have
22 another index with a potential of 100 percent. So people
23 would get the feeling, whow, it's really hammering --

24 MS. MURRAY: But on that --

25 HEARING OFFICER STUBCHAER: Let him --

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1 MR. SHAUL: -- that is not doing much for Delta
2 smelt. So it's just a bookkeeping thing, it's not
3 necessarily a comparison.

4 MS. MURRAY: And on that same page we have a graph
5 that depicts the combination of four boxes on the top and
6 a combination of four boxes on the bottom; isn't that
7 correct?

8 MR. SHAUL: For the --

9 MS. MURRAY: The Delta smelt entrainment index
10 combines the four boxes; is that correct?

11 MR. SHAUL: Yeah, but the Delta smelt entrainment
12 index those boxes are weighted by geographical
13 distribution and only has a potential index of 100
14 percent.

15 MS. MURRAY: Okay.

16 MR. SHAUL: Whereas the winter-run has a potential
17 index of 400 percent. So the magnitude of those
18 differences can vary -- they could be equal, but what you
19 will see in the picture is a magnitude difference of
20 four.

21 MS. MURRAY: Mr. Shaul, are you aware that the data
22 used for the new Figure 7 that we e-mailed and faxed to
23 you last night reflected an average of 20-percent
24 increase above the base condition?

25 MR. SHAUL: Can you repeat that question?

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1 MS. MURRAY: Are you aware that the data that we
2 used to produce Figure 7 that we e-mailed and faxed to
3 you last night reflected an average 20-percent increase
4 above the base condition?

5 MR. SHAUL: How is the 20 percent calculated --
6 20-percent increase?

7 MS. MURRAY: 20-percent increase.

8 MR. SHAUL: I didn't open the e-mail yet. So --
9 but you're talking about a 20-percent increase, that's
10 not -- I guess I'm not sure how that's calculated. What
11 does the 20-percent increase mean? I mean it's clearly
12 not -- it's a 20-percent change, right? Is that what
13 you're talking about, so you're taking the difference
14 between the two -- how are you calculating that percent?

15 MS. MURRAY: 20 percent above the base for the top
16 ten years in Figure 7.

17 MR. SHAUL: In Figure 7. I'm still not clear. The
18 percentages are very tricky.

19 MS. MURRAY: Right.

20 MR. SHAUL: And I know that there's not a
21 20-percent difference between the full index themselves.
22 But when you start talking about -- because the indices
23 themselves are percentages. And when you start talking
24 about developing a percentage difference between the
25 differences, I'd have to see how that was calculated.

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1 MS. MURRAY: Okay. I'll move on. You stated that
2 the fishery agencies accepted your mortality index as an
3 useful tool. Is that correct?

4 MR. SHAUL: That's true.

5 MS. MURRAY: In NMFS's letter of October 26, 1995,
6 that is included with the Department of Fish and Game's
7 biological opinion, didn't NMFS express concerns about
8 underestimating impacts on winter-run?

9 MR. SHAUL: Yes.

10 MS. MURRAY: Okay.

11 MR. SHAUL: And there were --

12 MS. MURRAY: Did NMFS use your mortality index in
13 their biological opinion?

14 MR. SHAUL: Yes. I think they did. That's what
15 they had.

16 MS. MURRAY: And did they --

17 MR. SHAUL: In addition to information --

18 MS. MURRAY: In addition to a lot of other --

19 HEARING OFFICER STUBCHAER: Please, just one at a
20 time. And you're up, Mr. Shaul.

21 MR. SHAUL: They used the mortality index, but I
22 provided and Jones and Stokes all kinds of information
23 including information on the effects of Key West which
24 are flows, basic flows in the lower San Joaquin River,
25 flows and all kinds of hydrologic and hydrodynamic

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1 information.

2 MS. MURRAY: Right, which were used by NMFS in
3 addition to your Mortality Model?

4 MR. SHAUL: I don't know exactly what they used.
5 Yes, we provided that information to them and that was
6 apparently used in the -- in their biological opinion.

7 MS. MURRAY: I just want to state -- to clarify the
8 record, you stated that only ten years were simulated
9 when you were discussing Figure 7. Did you mean to say
10 that all Marchs were simulated and only the top ten were
11 displayed into Figure 7?

12 MR. SHAUL: That's true. As I walked through the
13 example, there are 70 years and I tried to show that the
14 10 years with the greatest change between the no-project
15 and the ESA operation -- Delta Wetlands operation under
16 the ESA conditions, those ten years' readings.

17 MS. MURRAY: Okay. In your written rebuttal you
18 state that context should consider the monthly and
19 geographic occurrence of a species relative to the period
20 of operation of the Delta Wetlands Project. Do you
21 recall that?

22 MR. SHAUL: Yes.

23 MS. MURRAY: Okay. Mr. Shaul, are there any
24 reliable data that you are aware of that would allow you
25 to predict the percent of juvenile salmon present in the

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1 various locations of the Delta like you did for Delta
2 smelt?

3 MR. SHAUL: Well, that's -- the Delta --

4 MS. MURRAY: It's a "yes" or "no" answer.

5 MR. SHAUL: "Yes" or "no" answer?

6 MS. MURRAY: Could be.

7 MR. SHAUL: Could be.

8 MS. MURRAY: It's that simple.

9 HEARING OFFICER STUBCHAER: He's an expert and
10 experts are allowed to explain. So --

11 MR. SHAUL: One thing the Delta smelt is highly
12 variable to tules as you know and that was basically --
13 that was a percentage that I used and kind of came to an
14 agreement between Fish and Modeling Service. And we have
15 said, that's fine. We know it's not true in all years
16 and it varies. And we really do not know why it varies.

17 And that same condition is true for salmon. But
18 we do have some indication of how salmon are distributed
19 in the Delta, including how juveniles from basically --
20 from the entrainment records, or the salvage records at
21 the State and Federal Projects. And we know that San
22 Joaquin salmon are much more likely to be entrained than
23 Sacramento salmon. So we know they just don't enter the
24 Delta and become evenly distributed over the Delta. They
25 tend to enter the Delta and then disburse and are more

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1 concentrated in the areas where they enter the Delta.

2 MS. MURRAY: Did you apply percentages by
3 geographic location in your winter-run diversion index?

4 MR. SHAUL: Did I -- I was not --

5 MS. MURRAY: "Yes" or "no," Mr. Shaul.

6 MR. SHAUL: No, I did not.

7 MS. MURRAY: Thank you. Given this year's high
8 distribution of Delta smelt in the Central Delta would be
9 more or less vulnerable to water project operations --
10 I'll start over.

11 Given this year's high distribution of Delta
12 smelt in the Central Delta, would smelt be more or less
13 vulnerable to water project operations than predicted
14 using the geographic prediction that you assumed in the
15 biological opinion assessment in the Delta smelt
16 entrainment index?

17 MR. SHAUL: There's a couple parts of that
18 question.

19 MS. MURRAY: Right. You don't have to --

20 HEARING OFFICER STUBCHAER: Which project?

21 MS. MURRAY: Which project, the Delta -- what I'm
22 saying is this year's distribution of Delta smelt in his
23 winter -- or in his Delta smelt entrainment index, given
24 this year's high distribution in the Central Delta.

25 HEARING OFFICER STUBCHAER: You didn't define which

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1 project would have the impact.

2 MS. MURRAY: Oh, Delta Wetlands Project. Sorry.

3 MR. SHAUL: Yeah, for one thing this year's
4 distribution of Delta smelt shifted at -- during, I don't
5 know, March, April. I don't know exact dates, but during
6 March/April there was a high distribution of smelt in the
7 Central Delta. But as you got, I don't know whether it
8 was towards the end of April and May, but in May and June
9 you got a distribution of Delta smelt basically near the
10 confluence, or the highest distribution was there.

11 So, yeah, the model definitely assumes a fixed
12 distribution. And in one case if the smelt are
13 distributed in the Central Delta it would clearly
14 underestimate impacts. And if they were distributed in
15 the confluence it would clearly over estimate the impact.
16 And so -- that both happened during 1997, but we have no
17 way to predict at this point that I know of what the
18 distribution of those smelt will be.

19 MS. MURRAY: We do know that for this year if --
20 your model would have underestimated the impacts of the
21 Delta Wetlands Project?

22 MR. SHAUL: It would have underestimated the impact
23 if the Delta Wetlands Project was operating and -- it
24 is -- it's not quite that simple, because it depends what
25 the Delta Wetlands Project does, whether they divert,

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1 whether they discharge. And then the discharge location
2 is also important to consider whether they're discharging
3 from just Bacon Island, or whether they're discharging
4 from Webb Tract. And during the period when diversions
5 could occur, if they could occur during March and that's
6 when there was a Central Delta distribution, then the
7 model would have underestimated it -- could have
8 underestimated an impact at that point.

9 MS. MURRAY: Okay. Mr. Shaul, do you use the same
10 proportion of juvenile winter-run presence for your
11 M Salmon Model as you use in your Mortality Model?

12 MR. SHAUL: The occurrence of juveniles?

13 MS. MURRAY: Percent, same proportion.

14 MR. SHAUL: Right, the monthly. No. I think I was
15 explaining it, but when we did the -- Fish and Game
16 requested the M Salmon Model. And I developed the
17 M Salmon Model. I'm not sure that's really what they
18 requested. Seems like we had some -- we discussed that
19 yesterday. And it seems like there was some confusion.

20 But regardless, at that point for the M Salmon
21 Model I used a fix distribution. That's what we agreed
22 on, that's what I told them I would do. Whereas in the
23 Mortality Model that was in the EIR/EIS and in the BA, as
24 I explained earlier, I used the variable distribution
25 depending on what the hydrologic conditions were during

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1 the preceding months.

2 MS. MURRAY: Okay. Could you, please, explain why
3 your Mortality Model only looks at affects over a 15-day
4 period for each month evaluated when the entrainment
5 model uses a 30-day period?

6 MR. SHAUL: When I was first developing the index I
7 looked at a -- I was looking at different periods and
8 because the studies in the Delta with chinook salmon and
9 releases, and they looked at the mortality of salmon
10 moving to the cross channel, and the mortality released
11 below the cross channel, those studies are generally on a
12 shorter than 30-day period. So the reason I was only
13 using a 15-day entrainment index was because --
14 basically, because those studies generally cover 10 to 15
15 days. So that was why I did that.

16 But then I redid the analysis later. And it
17 doesn't -- after -- in most years, not in August, but in
18 most years over 90 percent of the years, it doesn't
19 matter whether you use a 15 day or 30 day. It gives you
20 the same result. There are some years in really low flow
21 years when Delta Wetlands is unlikely to operate that
22 that makes a difference. But in most of the years and in
23 the years when Delta Wetlands is going to operate it
24 doesn't matter whether you use a 30 day or 15 days
25 because water moves through the Delta and reaches pretty

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1 much its final distribution as far as the percentage
2 entrained after 15 days. And you wouldn't find a big
3 difference in that distribution whether you use 15 days
4 or 30 days.

5 MS. MURRAY: So that assumes 15 days that basically
6 the particles, which you are calling salmon, have moved
7 through the Delta, or to -- out in 15 days. Does it
8 account for rearing salmon that stay and rear?

9 MR. SHAUL: The 15 days is a measure of the
10 hydrodynamic conditions. And so it's not -- the way I
11 did the analysis and the BA and the EIR/EIS it accounts
12 for fish that are rearing. It has a cumulative
13 occurrence. So that if you add the occurrence to each
14 month it would be greater than 100 percent. Similar to
15 the occurrence that you have in the biological opinion,
16 the CESA biological opinion, if you add up all those
17 numbers you have 144 percent. So that assumes that
18 there's some rearing occurring. And that distribution
19 was also -- a cumulative distribution was also used in
20 the biological assessments and EIR/EIS.

21 MS. MURRAY: I have a slide. This is out of the
22 Draft EIR, Appendix A, Figure 8.

23 Mr. Shaul, in your rebuttal testimony you stated
24 that for winter-run chinook salmon your analysis was
25 based on the Mortality Model developed from studies by

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1 the U.S. Fish and Wildlife Service. Is that correct?

2 MR. SHAUL: Yes.

3 MS. MURRAY: Referring to Appendix A, Figure 8 of
4 the Draft EIR this figure depicts the model conditions of
5 juvenile salmon mortality as a function of water
6 temperature off the Sacramento River and percent diverted
7 at the Delta Cross Channel and Georgiana Slough; isn't
8 that true?

9 MR. SHAUL: That's true.

10 MS. MURRAY: Did you develop this figure, or the
11 information that went into this figure?

12 MR. SHAUL: Yes, I did.

13 MS. MURRAY: Okay. Following -- let's look at the
14 bottom figure, the mortality index which we've been
15 talking about quite a bit. At the 50-percent flow split
16 and 60 degree temperature; isn't it true that the
17 mortality index would be about 60 -- about 60 -- about 70
18 percent?

19 MR. SHAUL: Okay. Run that by me again.

20 MS. MURRAY: Okay. I've got my pointer now.

21 MR. SHAUL: Okay.

22 MS. MURRAY: So looking at this figure, about 60
23 degrees, wouldn't this show that -- let me get to this,
24 the mortality would be 70 percent, about 70 -- about --

25 MR. SHAUL: 60 percent, roughly.

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1 MS. MURRAY: Okay, oh, I need glasses.

2 MR. SHAUL: That's CDFB is equivalent to the
3 percent entrained from the Mokelumne box.

4 MS. MURRAY: Right.

5 MR. SHAUL: So at that level of entrainment and the
6 temperature of roughly 60 degrees you'd have a mortality
7 index of roughly 60 percent --

8 MS. MURRAY: Okay.

9 MR. SHAUL: -- for fish moving down -- moving
10 into -- or moving through the Cross Channel and Georgiana
11 Slough.

12 MS. MURRAY: Okay. So continuing up to 66 degrees
13 temperature, what would -- approximately would be about
14 80?

15 MR. SHAUL: That's true.

16 MS. MURRAY: Okay. And if we were to use the 20.
17 And here let's look at the mortality. And up here,
18 again, at the 50 --

19 HEARING OFFICER STUBCHAER: When you say "up here"
20 is the top.

21 MS. MURRAY: Up here is the top figure in Figure
22 Appendix A, Figure 8.

23 MR. SHAUL: Right.

24 MS. MURRAY: At 60 degrees -- a little below 70?

25 MR. SHAUL: Let me explain what these figures are.

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1 The bottom figure has a fixed proportion of Sacramento
2 River flow of 50 -- yeah, 50 percent I think it was. I
3 can't see the whole figure. And it may not say in the
4 figure. It doesn't, but it says in the text. But anyway
5 the bottom figure assumes a 50-percent flow split. The
6 top figure is talking about the flow division in the
7 Georgiana Slough.

8 MS. MURRAY: Okay.

9 MR. SHAUL: And the Delta Cross Channel. And it
10 has a fixed percentage for the cross Delta flow
11 parameter, and I think that's 50 percent at that point.
12 So -- and the question was?

13 MS. MURRAY: And the question is: Looking at these
14 curves, this to this, isn't it true that the percent
15 mortality index at 66 degrees Fahrenheit is 15-percent
16 higher than the mortality index at 60 degrees
17 Fahrenheit -- that's 25, sorry?

18 MR. SHAUL: So the mortality is higher at the
19 higher temperature?

20 MS. MURRAY: Yes, by 25 percent.

21 MR. SHAUL: Roughly, yeah.

22 MS. MURRAY: And would you consider that
23 significant, the 25-percent increase in mortality?

24 MR. SHAUL: Yes. Yes, I would.

25 HEARING OFFICER STUBCHAER: Actually -- 25 percent

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1 point --

2 MS. MURRAY: 25 percent point -- yeah. No further
3 questions.

4 HEARING OFFICER STUBCHAER: Okay. Staff?
5 Mr. Sutton.

6 ---oOo---

7 REBUTTAL CROSS-EXAMINATION OF DELTA WETLANDS PROPERTIES
8 BY STAFF

9 MR. SUTTON: Mr. Shaul, I'd like to follow-up on
10 the question relative to this year's Delta smelt
11 distribution. I believe the question was asked relative
12 to the distribution of Delta smelt, the high distribution
13 of Central Delta in March of this year; is that correct?

14 MR. SHAUL: That's correct. That's based on the 20
15 millimeter index survey.

16 MR. SUTTON: 20 millimeter index. Okay.

17 MR. SHAUL: I'm pretty sure that's correct --
18 that's correct, yeah.

19 MR. SUTTON: That was March 31st?

20 MR. SHAUL: Yeah, end of March.

21 MR. SUTTON: Okay. And I believe part of your
22 answer was that it depended on the -- the question was
23 posed to you was: Would your model have underestimated
24 the impacts of Delta Wetlands operations this year
25 because of the higher than modeled distribution of Delta

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1 smelt in the Central Delta; is that correct?

2 MR. SHAUL: That's correct. And I should add there
3 is another qualifier to that. One is if the Delta smelt
4 spawn in March and the model has a fixed distribution,
5 which I'm -- I can't remember what it was but it seems
6 like it's 15 percent, 30 percent, and 35 percent,
7 whatever the remainder is in June.

8 So it has a fixed distribution. And it assumes
9 a fairly -- a lower percentage spawning, or actually
10 hatching in March. So if you have a higher percentage
11 hatching in March, and it also assumes a geographic
12 distribution where 50 percent on the Sacramento side and
13 the other 50 percent is divided among the Central Delta,
14 the lower San Joaquin, and the Mokelumne. So if you --
15 because your geographical distribution in March, it's not
16 actually that. This year they were -- it looked like
17 they were primarily all in the Central Delta during
18 March.

19 The factor we don't know is we don't know what
20 proportion of the population was that? And was there --
21 was there a -- was it just a small proportion of the
22 population? So we don't know exactly what the bias is.
23 And I haven't looked at the data or talked to Dale enough
24 to -- I'm not sure we even know what that bias would be.
25 But there's a potential that if -- that we are

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1 underestimating it, but any time you use a fixed number
2 for a variable then there's always the potential for
3 underestimating or overestimating.

4 MR. SUTTON: The second proviso I think in your
5 answer was that it depended on what Delta Wetlands was
6 doing in March, whether they were operating or not; is
7 that correct?

8 MR. SHAUL: That's correct.

9 MR. SUTTON: You're basically familiar with how
10 Delta Wetlands operates, or is proposed to operate in
11 terms of the model runs and that sort of thing?

12 MR. SHAUL: Yes.

13 MR. SUTTON: Given the hydrology of last winter
14 would you expect if 1996/97 was modeled that Delta
15 Wetlands would be operating in March?

16 MR. SHAUL: Delta Wetlands would not be diverting
17 in March, because they most likely would have filled in
18 January, or -- yeah, December to January. Whether they
19 would discharge in March, I'm not a hundred-percent sure,
20 because I haven't looked that closely to see if there
21 were export capacity and what the conditions were. They
22 might have exported in March.

23 MR. SUTTON: So -- but in any particular year then
24 when you're looking at the actual data that comes out
25 from a year and comparing it to your model results, those

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1 can only be viewed in the context of what the project
2 would likely have been doing at that time; is that
3 correct?

4 MR. SHAUL: That's correct.

5 MR. SUTTON: Thank you.

6 HEARING OFFICER STUBCHAER: Any other questions by
7 staff?

8 MS. LEIDIGH: No.

9 HEARING OFFICER STUBCHAER: I just have -- I
10 appreciate the explanation of this entrainment index.
11 This is a comment sort of. I think it's unfortunate to
12 be calling something a percent when the top is 400,
13 because you're not going to have an entrainment index of
14 400 percent, I don't think. It's clearer to me that you
15 divide this or normalized it down to a hundred percent on
16 the winter-run salmon like it was done on the Delta
17 smelt.

18 And I think that the witness has a point in that
19 somebody just looking at the index, not knowing that the
20 top is 400 could be misled and think it's significant.
21 So: Isn't that so? I'm learning from the lawyers.
22 Okay.

23 Thank you, Mr. Shaul. Do we have exhibits to
24 do?

25 MS. BRENNER: Yes.

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1 MR. SUTTON: Yes. We have a slough of exhibits.

2 MS. BRENNER: Delta Wetlands would like to move
3 into evidence, actually, all their exhibits: DW 1
4 through DW 75 is where we ended up at this time.

5 HEARING OFFICER STUBCHAER: Mr. Sutton?

6 MS. BRENNER: And that would be with the
7 previous -- yesterday's clarification with regard to our
8 exhibit list. And also I'd like to add that we'll be
9 providing a revised exhibit list, or exhibit
10 identification index.

11 MR. SUTTON: So it's 1 through 75. And you've
12 already put in 1 through 37. And those have been
13 accepted.

14 MS. BRENNER: Right.

15 MR. SUTTON: And you've withdrew Delta Wetlands 24.

16 MS. BRENNER: We withdraw Delta Wetlands 24,
17 correct.

18 MR. SUTTON: And the other clarifications that we
19 made yesterday.

20 MS. BRENNER: And the other clarifications that we
21 made, right. And the reason why I say "1 through" is
22 because some of the additions are such as DW 7B, or 10B,
23 10C. So for ease of reference I'll just make it 1
24 through 75.

25 MR. SUTTON: And Delta Wetlands 25 is -- has not

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1 yet been accepted along with the rest of them, because it
2 was protested.

3 MS. BRENNER: The -- okay. The ASME B31.4?

4 MR. SUTTON: That's correct.

5 MS. LEIDIGH: That's up for question --

6 HEARING OFFICER STUBCHAER: The person who raised
7 that objection is not here. That was Mr. Moss, wasn't
8 it?

9 MS. BRENNER: Correct.

10 HEARING OFFICER STUBCHAER: All right. Are there
11 any other objections to the receipt of these exhibits?
12 Seeing none, I'll accept them all.

13 MS. BRENNER: Thank you, Mr. Stubchaer.

14 HEARING OFFICER STUBCHAER: Remaining item and
15 business of this hearing is the cross-examination of the
16 Department of Fish and Game rebuttal witnesses.

17 Witnesses, please, take the table. And I'd like
18 to have the usual show of hands of who intends to
19 cross-examine this panel. Delta Wetlands, East Bay.
20 Okay.

21 I think I'll let you go first, Mr. Etheridge.

22 MR. ETHERIDGE: Thank you.

23 MS. MURRAY: Before we begin the cross-examination
24 I'd like to have a few clarifying -- a few clarifying
25 comments. We mailed out a letter regarding: Subject:

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1 Clarification of Department of Fish and Game Biological
2 Opinion, August 14th to all the parties and 13 copies to
3 the Board. This probably should be added as an
4 additional exhibit, which would be DFG 22.

5 In addition, at the end of our -- July 31st
6 there was some discussion about the Draft Delta Wetlands
7 Monitoring Plan for Swainson's hawk and greater sandhill
8 crane --

9 THE COURT REPORTER: I'm sorry, Ms. Murray, could
10 you please slow down?

11 MS. MURRAY: I'm sorry. I'll start over. At the
12 end of the hearing on the 31st of July there was some
13 discussion about the fact that we needed a Draft Delta
14 Wetlands Monitoring Plan for Swainson's hawk, greater
15 sandhill crane. And that the Department said it would do
16 that first draft and get it into the hearing record prior
17 to the close.

18 We sent that to Mr. Canaday August 11th. And I
19 have the additional 13 copies for the Board and other
20 parties. That would be DFG 23. And I believe Delta
21 Wetlands already has your copy.

22 MS. BRENNER: We borrowed a copy from someone.

23 MS. MURRAY: Does anyone else need a copy?

24 MS. BRENNER: We borrowed someone's.

25 MS. MURRAY: Oh, you borrowed Jim's. So --

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1 HEARING OFFICER STUBCHAER: Let's go off the
2 record.

3 (Off the record.)

4 HEARING OFFICER STUBCHAER: Back on the record.
5 Mr. Nelson.

6 MR. NELSON: I'd like to clarify that Delta
7 Wetlands would like the opportunity to cross-examine on
8 those two documents.

9 HEARING OFFICER STUBCHAER: All right.

10 MS. MURRAY: One other thing that was discussed
11 this morning was we have revised Figure 7 and 12, based
12 on discussions last night, that, we would like to enter
13 as DFG Exhibit -- this one will be 24 and 25. These are
14 the 13 copies. These are the 13 copies for the Board.

15 MR. SUTTON: Just for clarification, Ms. Murray, so
16 I'm clear that -- those two figures are the same figures
17 that Delta Wetlands also put in as their exhibits?

18 MS. MURRAY: Correct.

19 MR. SUTTON: Thank you.

20 HEARING OFFICER STUBCHAER: Does that conclude your
21 introductory --

22 MS. MURRAY: Yes.

23 HEARING OFFICER STUBCHAER: -- comments?

24 MS. MURRAY: Yes. Thank you.

25 HEARING OFFICER STUBCHAER: Mr. Sutton.

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1 quote.

2 Is that correct?

3 HEARING OFFICER STUBCHAER: They're deciding on who
4 should answer. And the way you're doing that, it's
5 appropriate.

6 MR. SWEETNAM: What are you looking at?

7 MR. ETHERIDGE: Looking at the written -- DFG
8 Exhibit Number 19, I believe. It was the combined
9 written rebuttal testimony of various witnesses. And
10 this has to do with the phase, period of residence of fry
11 in the estuary.

12 MS. McKEE: Yes.

13 MR. ETHERIDGE: Okay. Is that period of residence
14 also sometimes called "fry rearing"?

15 MS. McKEE: Yes.

16 MR. ETHERIDGE: So is it your opinion that salmon
17 fry may reside, or rear in the Delta?

18 MS. McKEE: Yes.

19 MR. ETHERIDGE: Okay. Thank you. On that same
20 page of the testimony it discusses the entrainment of
21 young chinook salmon at the State and Federal Project
22 salvage facilities. Is that correct?

23 MS. McKEE: That's correct.

24 MR. ETHERIDGE: And that testimony states that not
25 only the smallest fry, but even larger young chinook

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1 salmon are found entrained in these facilities. Is that
2 correct?

3 MS. McKEE: That's correct.

4 MR. ETHERIDGE: All right. Does this entrainment
5 include young Mokelumne River salmon?

6 MS. McKEE: Yes.

7 MR. ETHERIDGE: What do you mean when you say that
8 fish are entrained at those facilities?

9 MS. McKEE: It means that they are -- some are
10 entrained and are not actually salvaged by the louver
11 screening systems. Some are salvaged and placed in
12 secondary holding tanks. And the Department of Fish and
13 Game in cooperation with the Bureau and DWR actually
14 evaluate those salvaged fish and identify with clear
15 water tags. We identify where those fish are from, which
16 is why we know that we get both fry and yearling --
17 juvenile and yearling Mokelumne River fish as well as
18 from various other sources. And entrainment is the term
19 that most of the biologists use in general for the fish
20 that are taken at the facilities whether they're lost, or
21 they're salvaged.

22 MR. ETHERIDGE: Can entrainment -- is the term
23 entrainment also used at times to cover impingement?

24 MS. McKEE: Yes. It's the loss values for fish
25 living within the forebay would include fish that pass

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1 through the louvers, or that are impinged and then die
2 and are not actually salvaged.

3 MR. ETHERIDGE: Okay. Is it your opinion that the
4 Delta Wetlands Project would cause increased entrainment
5 of chinook salmon?

6 MS. MCKEE: Yes, it is.

7 MR. ETHERIDGE: Thank you. That's all the
8 questions I have.

9 HEARING OFFICER STUBCHAER: Thank you.

10 MR. ETHERIDGE: Thank you, Mr. Stubchaer.

11 HEARING OFFICER STUBCHAER: Is it Mr. Nelson for
12 Delta Wetlands?

13 MS. BRENNER: Yeah. We were wondering -- Delta
14 Wetlands was wondering if it would be okay to take an
15 early lunch. We have a couple things we'd like to
16 discuss before we begin the Department of Fish and Game
17 cross. And then cross, I believe, will go beyond the
18 half hour that's remaining before lunch.

19 HEARING OFFICER STUBCHAER: How long --

20 MS. MURRAY: That was going to be my question.

21 HEARING OFFICER STUBCHAER: Yeah, how long do you
22 think your total cross will go?

23 MR. NELSON: 45 minutes to an hour.

24 HEARING OFFICER STUBCHAER: Well, my experience
25 would be double that. But anyway a great incentive would

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be to just keep going until we're through. No one would
get lunch, and we'd have stomach politics here.

MS. BRENNER: Could we take a few minutes before --

HEARING OFFICER STUBCHAER: No, I will. I'll be
reasonable. We'll take our lunch break now and reconvene
at 12:30.

MS. BRENNER: Thank you, Mr. Stubchaer

(Luncheon recess.)

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WEDNESDAY, AUGUST 20, 1997, 12:30 P.M.

SACRAMENTO, CALIFORNIA

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HEARING OFFICER STUBCHAER: We'll reconvene the hearing. Cross-examination of the Fish and Game rebuttal witnesses. Mr. Nelson.

MR. NELSON: I have a couple of procedural matters to address first. Mr. Stubchaer, we would move to strike Fish and Game's submission of the declaration of Jim Lecky. Mr. Lecky has not been proffered as a witness for cross-examination for the purpose of this Board. And without his presence as a witness, we do not -- we are not being offered the full right to cross-examine Mr. Lecky on the statements that are made in his declaration.

HEARING OFFICER STUBCHAER: What's that exhibit number?

MS. MURRAY: 20, DFG Exhibit 20.

HEARING OFFICER STUBCHAER: We'll take your -- well, we'll take that under the advisement rule later. What's your other --

MS. MURRAY: Well, can I comment on that?

HEARING OFFICER STUBCHAER: Yes.

MS. MURRAY: And I did contact the National Marine Fishery Service and requested that they come. As you may know, they have very strict and tight regulations about

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1 allowing their employees to attend matters in which they
2 are not a party. That requires the approval from the
3 Department of Justice in Washington, D.C. So they
4 offered this declaration in lieu of coming here. And
5 very narrowly focused their declaration just on their
6 intent and processes, much of which Delta Wetlands has
7 testified to what they thought their intent was. And I
8 think to make the record clear we need National Marine
9 Fishery Service to say what they intended and what their
10 thought process was. So I did try to get him here. And
11 this was the compromise that we reached.

12 HEARING OFFICER STUBCHAER: All right. What's your
13 other procedural matter?

14 MR. NELSON: Mr. Stubchaer, Ms. Murray also
15 mentioned this morning that they were possibly going to
16 revise the tables that Ms. McKee has in her testimony.
17 And we had a question -- a request in that sense that if
18 Ms. McKee wishes to retrack her tables, we'd be fine. We
19 wouldn't have any problems with that.

20 But if she's going to submit clarifications, or
21 corrections to that table we would like the opportunity
22 to cross-examination her on those tables. And to the
23 extent that those tables obviously have not been
24 submitted right now, I'd like to be able to iron out how
25 we're going to deal with any such clarifications. If

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1 they wish to retract the tables because they need to make
2 corrections, that would be fine. But if they're going to
3 submit new ones, we do need the opportunity to
4 cross-examine on those tables.

5 HEARING OFFICER STUBCHAER: What's the exhibit
6 number?

7 MS. MURRAY: It's DFG Exhibit 5, Table 5. And what
8 we are prepared to do is -- is ask the Board to commit
9 Warren to work with us to again come to an agreement on
10 the table. We would then submit that for -- as an
11 exhibit to the Board. That we did not have time to do,
12 that additional step last night. We feel that that --
13 what we'd do is make sure we agree before we put it into
14 the record.

15 HEARING OFFICER STUBCHAER: And this is the result
16 of the clarification of Mr. Shaul's rebuttal testimony
17 yesterday?

18 MS. MURRAY: Yes.

19 HEARING OFFICER STUBCHAER: When do you think that
20 exhibit would be ready for submittal into the record?

21 MS. MURRAY: I think it's somewhat of a function of
22 getting all the data we need from Warren. Is that true?

23 MS. McKEE: Well, it's a function of what Warren's
24 availability is to sit and look at it. It's the exact
25 same data that was testified to today, but it's simply

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1 going through and picking out the average and the maximum
2 values and making sure that he agrees that we didn't make
3 any miscalculation in placing them in the table. So it's
4 the same data set. We just want to make sure no one
5 disagrees with how we calculate simple averages and
6 maximum values. And we have not been able to do that
7 yet.

8 MS. MURRAY: And that we have an agreed upon
9 significance --

10 MS. MCKEE: Yes, significance digits.

11 HEARING OFFICER STUBCHAER: Right. I suppose we
12 could go back to the deposition means of cross-examining,
13 if necessary. I don't know -- we need to know how long
14 this is going to take because, in effect, how long we're
15 going to keep the record open. If it's a real long
16 period of time, I don't think I want to do it.

17 MS. MURRAY: Can you do it within a week?

18 MS. MCKEE: Certainly, within a week. If we are
19 adjourned here today by mid-afternoon and Warren is
20 available then it would be possible to reach agreement on
21 that today, or perhaps as early tomorrow morning. But
22 it's just -- I don't know what Warren's schedule is.

23 HEARING OFFICER STUBCHAER: Ms. Leidigh, did you
24 want to say something?

25 MS. LEIDIGH: I'm not sure. Maybe I should speak

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1 to you about it.

2 HEARING OFFICER STUBCHAER: Okay. Time out a
3 minute.

4 (Discussion held off the record.)

5 HEARING OFFICER STUBCHAER: Okay. We'll go back on
6 the record. As I understand what's being requested here,
7 this is just -- it's a crotchet because of the -- well, I
8 don't want to use a strong word and say, the wrong date
9 had been used in the columns. It's a correction to
10 correct a figure. And I don't know if we know whether
11 it's going to be favorable or unfavorable to any party.
12 It's just a correction.

13 And I'm willing to allow the correction to be
14 made with the involvement of Mr. Shaul to make sure it's
15 done right. But when we get to the point in view of
16 having opinions change -- is it likely any opinions will
17 change as a result of this correction? Does anyone know?

18 MS. MURRAY: It would be your opinion, Deborah.

19 MR. NELSON: Mr. Stubchaer, with respect to Delta
20 Wetlands, without seeing the data I don't think we can
21 even speculate -- I wouldn't want to speculate as to what
22 would happen.

23 HEARING OFFICER STUBCHAER: All right.
24 Ms. Leidigh.

25 MS. LEIDIGH: Yeah. I wanted to ask whether -- or

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1 between whom you're talking about having an agreement on
2 information. Is this an agreement that you're
3 contemplating between Fish and Game and Delta Wetlands?

4 MS. MURRAY: It was an agreement I was
5 contemplating between Ms. McKee and Mr. Shaul to make
6 sure that they -- he didn't think that we were misusing
7 his data in any way. It's his index. And that we took
8 his numbers, put them into a table that showed it in a
9 different format, and that he was okay with this data.

10 MS. LEIDIGH: I have some concerns about Mr. Shaul
11 making an agreement since he's part of the EIR consultant
12 team --

13 MS. MURRAY: Well, it would be very similar to last
14 night's --

15 MS. LEIDIGH: If he could provide his opinion as to
16 Ms. McKee's information, I think that would be fine. But
17 I don't like the idea that there would be bargaining
18 between them.

19 MS. MURRAY: And, actually, it would just be an
20 approval.

21 HEARING OFFICER STUBCHAER: I think that we have a
22 semantic problem. To some people agreement means a
23 contract, and I think you're just talking about
24 collaboration.

25 MS. MURRAY: Right, very similar to last night.

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1 MS. McKEE: That's correct. In fact if the data
2 analysis last night had contained another column that was
3 the percentages, Mr. Shaul could pick out those numbers.
4 It's just making sure that the new data set and the
5 appropriate values are inserted in this table. And
6 anyone could do that. I just don't have that data set
7 yet. And I want to make sure he agrees I didn't pick the
8 wrong number.

9 HEARING OFFICER STUBCHAER: All right. If you can
10 do it in a timely manner, provide it to all the parties
11 and we'll give the opportunity to Delta Wetlands if they
12 desire to cross-examination by deposition in a reasonable
13 period of time.

14 MR. NELSON: Thank you.

15 HEARING OFFICER STUBCHAER: Any other procedural
16 matters?

17 MR. NELSON: I have no more. I'll start my
18 questioning now.

19 ----oOo----

20 REBUTTAL CROSS-EXAMINATION OF THE DEPARTMENT OF

21 FISH AND GAME

22 BY DELTA WETLANDS PROPERTIES

23 BY JOSEPH NELSON

24 MR. NELSON: I believe this question is going to go
25 to Mr. Wernette. Sometimes I'll be guessing who should

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1 MS. SLOMSKI: Joe, do you actually want it up here?

2 MR. NELSON: Yeah. This is Table B1-8 of the
3 Appendix from the Draft EIR. Now, Mr. Wernette, looking
4 at the title of Table B1-8, it states "Summary of typical
5 net Delta channel flows during periods of maximum Delta
6 Wetlands discharge of 6,000 csf. 4,000 csf from Bacon
7 Island and 2,000 csf from Webb Tract.

8 Now, isn't it true that Delta Wetlands cannot
9 discharge from Webb Tract from January through June?

10 MR. WERNETTE: That's correct.

11 MR. NELSON: Given that statement, isn't it true
12 that the 34-percent increase that you were referring to
13 comes from -- coming from Table B1-8 could never occur in
14 that March through June period?

15 MR. WERNETTE: Given the operating criteria that we
16 have now, this table would probably not apply directly
17 because of that additional releases from Webb Track that
18 are modeled. However, the indication of no change in
19 hydrodynamics in the South Delta related to discharges
20 for export that is a principle reason for making our
21 statement and our concern.

22 When releases are allowed from Bacon Island then
23 we are concerned that since that island is in the South
24 Delta that it will result in adverse hydrodynamic changes
25 as indicated by the results of this model.

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1 MR. NELSON: But looking at the March through June
2 period, isn't it true that the maximum discharge at any
3 time for Delta Wetlands in the March through June period
4 would be 4,000 csf, not 6,000 csf?

5 MR. WERNETTE: That's correct, it would be 4,000
6 from Bacon Island.

7 MR. NELSON: Thank you. On page two of Fish and
8 Game's rebuttal testimony, Mr. Wernette, you also state
9 that without the reasonable and prudent measures and
10 additional conservation measures that had been proposed
11 in the Fish and Game biological opinion, quote,
12 "substantial direct mortality will occur."

13 Does Fish and Game have any direct data
14 identifying and quantifying this direct mortality that
15 you are referring to?

16 MR. WERNETTE: The information that we used is
17 qualitative principally. And the data, or the output of
18 the model that was provided by Jones and Stokes was used
19 to give us some indication of the direction and magnitude
20 of change in terms of entrainment. So other than the
21 modeling information from Jones and Stokes and the
22 information in the biological assessment, we don't have
23 independent numbers calculated for that entrainment.

24 MR. NELSON: If you will -- if you're making a
25 judgment that substantial direct mortality would occur,

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1 then how did you find that -- how did you define
2 "substantial mortality"?

3 MR. WERNETTE: We didn't evaluate it from a
4 standpoint of defining very strict guides, or guidelines
5 for significance. What we used was in our judgment, our
6 biological judgment, changes that would -- hydrodynamic
7 changes that would result in increased entrainment that
8 we believed represented significant, or substantial
9 changes from what was occurring now with the Water Accord
10 and the 1995 Water Quality Control Plan.

11 And increases in entrainment that were more than
12 just background levels representing a substantial
13 degradation of the protection under the Water Quality
14 Control Plan and the Water Accord. So it's from that
15 judgment that we used the word "substantial."

16 MR. NELSON: So are you saying that the substantial
17 mortality -- did you define substantial mortality?

18 MR. WERNETTE: We did not specifically define what
19 that meant.

20 MR. NELSON: You refer to the fact, in answering my
21 previous question, that you used the models that Jones
22 and Stokes provided to you. Can you identify those
23 models that you used to identify mortality that would
24 occur?

25 MR. WERNETTE: Yes. We used the -- several models.

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1 One was the one that we've discussed quite a bit today by
2 Warren. And it was the Delta Smelt Entrainment Model
3 that, you know, our department agreed with and was used
4 pretty much as -- as presented by Jones and Stokes and by
5 Warren Shaul this morning. We used our own model that's
6 been talked about substantially for quite a bit of this
7 morning.

8 In addition to that, we used as -- as also a
9 tool, the actual Mortality Model that Jones and Stokes
10 developed and presented in its biological opinion --
11 assessment for the Board. And so those are some data.
12 An example of that information that -- that hasn't been
13 discussed today in a lot of detail is: Is that mortality
14 index from the standpoint of impacts based on the
15 no-project condition and what would happen with the
16 project?

17 Deborah McKee has prepared a table that shows
18 how, for instance, that mortality data that Warren
19 described as the first approach in his rebuttal testimony
20 yesterday and this morning, you know, gives one of the
21 examples of some of the tools that we used to evaluate
22 that entrainment. And if it would be appropriate, you
23 know, to show that table, or show that figure to
24 illustrate one of the tools that we used to evaluate that
25 entrainment change, it would be helpful probably to the

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1 Board and to others here to see how we used that
2 information.

3 MR. NELSON: Actually, I'd actually like to go back
4 to the question. Isn't it true that none of those models
5 that you're identifying actually predict a mortality of
6 salmon, they are only predicting flow or hydrodynamic
7 changes, changes in hydrodynamic conditions?

8 MS. McKEE: When --

9 MR. WERNETTE: In the --

10 MR. NELSON: Excuse me, I've directed the question
11 to Mr. Wernette. And I would like to hear Mr. Wernette
12 answer the question. If Ms. McKee wants to add something
13 after Mr. Wernette, then I will ask Ms. McKee a question
14 after. But I'd like to hear Mr. Wernette's answer first.

15 MS. MURRAY: Well, for point of clarification
16 first, can I just say that if Mr. Wernette wants to ask a
17 fellow team member for assistance for the question that
18 he should feel free to do that and not have to wait for
19 you.

20 HEARING OFFICER STUBCHAER: Our usual rule. Our
21 rules are that any person on the panel can answer the
22 question. Usually it's the best qualified person who
23 answers it. And that's why we have cross-examination by
24 the panels.

25 MR. NELSON: Okay.

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1 MS. MURRAY: Do you need to have that question
2 repeated?

3 MR. WERNETTE: Maybe you can repeat it, Joe.

4 MR. NELSON: Isn't it true that the indexes that
5 you stated that you used in determining mortality, none
6 of those actually predict mortality, they only predict
7 hydro -- changes in hydrodynamic conditions in the Delta?

8 MR. WERNETTE: I don't believe that that's true.
9 And I'll -- I'll explain. The first tool we used, the
10 Delta Smelt Entrainment Index, was agreed to by the
11 consultation participants to be a good representation of
12 how mortality of Delta smelt, particularly the juvenile,
13 or larval life stages, what the impact might be on that
14 life stage for Delta smelt.

15 We did not say that there was a one-to-one
16 relationship between the index that was derived by the
17 model and a direct representation of mortality, but gave
18 us an indication of the increase and relative magnitude
19 of mortality. So we could compare it with or without
20 project, and we could compare different mitigation
21 measures that we were investigating during consultation.
22 So from that standpoint I'd say that your first comment
23 was not accurate.

24 Secondly, when the Department evaluated its
25 winter-run entrainment index and they asked Warren to

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1 craft -- to combine those data and help us in doing that,
2 that really is accurate your statement, Joe, that that
3 represents a hydrodynamic, or habitat model that
4 describes qualitatively, particularly what's happening
5 with internal Delta hydrodynamics, that our Department
6 believes is important of from the standpoint of health of
7 the estuary.

8 However, the third tool which is the Mortality
9 Model that Warren Shaul prepared, again, with the same
10 caveats that I mentioned for Delta smelt, that an
11 indication of direct magnitude in terms of mortality,
12 that based on the fall -- fall-run salmon it represented
13 a tool of measuring mortality changes. And that --
14 again, I may be will ask Deborah McKee to add a few
15 things particularly about that third tool to see if she
16 can maybe add to my answer.

17 MS. McKEE: Yes. It's our understanding that the
18 Mortality Model was, in fact, an effort to measure the
19 level of existing mortality. And then the incremental
20 changes and the various project alternatives. And that
21 it was not as the entrainment, or Diversion Index Model a
22 measurement of habitat changes. And, in fact, looking at
23 the output it is -- it is represented in terms of percent
24 mortality.

25 Now, this is the documentation from the Jones

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1 and Stokes model itself which describes what is the
2 Mortality Model. This is their computer file --

3 HEARING OFFICER STUBCHAER: And when you say "this
4 is" you're referring to something projected on the
5 screen.

6 MS. McKEE: I'm sorry. The talking point is I'm
7 describing the internal documentation provided by Jones
8 and Stokes for their Mortality Model. Do you want me to
9 read it for the record?

10 HEARING OFFICER STUBCHAER: I don't think you need
11 to read it verbatim.

12 MS. McKEE: Okay. What it basically describes in
13 the description is that it is a measurement of mortality.
14 And we can go ahead and --

15 MS. MURRAY: Sure. Answer the question.

16 MR. NELSON: Can I ask a question: You say it's a
17 measurement of a mortality, or mortality index of flow --
18 of hydrodynamic conditions?

19 MS. McKEE: No. It is ultimately a measurement of
20 the number of winter-run chinook salmon that are killed
21 as a result of both no-project existing conditions as
22 they move through the Delta, and the incremental change
23 under various project alternatives. And the output is a
24 percent. It's an index percent of winter-run that die.

25 MR. NELSON: Could I have a second to confer with

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1 my co-counsel?

2 HEARING OFFICER STUBCHAER: Yes.

3 MR. NELSON: Okay. I'm back. Ms. McKee, the
4 mortality -- when the mortality index is being run, isn't
5 it showing the entrainment of water into diversions?

6 MS. MCKEE: The mortality index is based on how
7 many winter-run chinook salmon are presumed to be present
8 in the system in any given month. That is based on the
9 distribution that Mr. Shaul presented in the EIR/EIS.
10 We've discussed that some this morning as far as his
11 distribution versus our Figure 1.

12 And then based on how many fish are present and
13 subject to the Cross Delta flow parameter and the flow
14 division at Georgiana Slough and the Delta Cross Channel
15 those fish move according to the proportion of net flow
16 into the Central Delta and are exposed to the Cross Delta
17 flow parameter, or the Mokelumne River flow box.

18 Those fish then have a mortality or universally
19 a survival factor. And that is -- in fact, we have -- we
20 had that overhead up on the board this morning. Does
21 somebody have that overhead that shows the temperature
22 Cross Delta flow factor? I'll try to describe it
23 verbally.

24 MS. MURRAY: Here.

25 MS. MCKEE: There it is. So the survival, or

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1 mortality factor -- this is from Appendix A, Figure 8 of
2 the EIR/EIS which describes just how Jones and Stokes
3 developed this mortality index. And it is a function of
4 water temperature, and the Cross Delta flow parameter.

5 So for every fish that is exposed -- it's the
6 bottom one, actually. This is the mortality index and
7 it's a multi-variate function which is both Cross Delta
8 flow parameter and temperature. So for every fish
9 exposed to this particular function there is a rate of
10 mortality.

11 And the model basically runs for a 15-day
12 period. And it assumes that after the first 15 days
13 those fish that are going to experience mortality have
14 experienced it. And then the next crop of fish come into
15 the system and -- for the next month.

16 MR. NELSON: I'll ask this question, I'm not sure
17 whether it's really Ms. McKee or Mr. Wernette:

18 Looking with respect to these modeling efforts
19 and the fact that they assess and calculate diversion of
20 flows -- and, Mr. Wernette, I believe you said that there
21 was some level of inverse relationship between the
22 indices and salmon survival; is that correct?

23 MR. WERNETTE: That's correct.

24 MR. NELSON: Isn't it true, then, that if all the
25 presently unscreened 1800 diversions in the Delta were

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1 screened with DFG approved fish screens, DFG's use of the
2 so-called "diversion index" would show absolutely no-net
3 improvement of salmon survival in the Delta?

4 MR. WERNETTE: Did you ask whether all the
5 diversions in the Delta were screened, or just the
6 project diversions?

7 MR. NELSON: Yes. If all the diversions in the
8 Delta were screened and -- isn't it true, that these
9 indices would show no-net improvement in salmon survival?

10 MR. WERNETTE: If --

11 MR. NELSON: Isn't it true that they would not show
12 a net improvement in survival even though all the Delta
13 diversions would be screened with DFG approved fish
14 screens, if -- given that hypothetical?

15 MR. WERNETTE: Are you saying that if all of the
16 diversions were screened in the Delta, and assuming that
17 they were all a hundred-percent efficient --

18 MR. NELSON: Right.

19 MR. WERNETTE: -- would that eliminate direct
20 losses of fish into diversions?

21 MR. NELSON: No. What I'm asking is: Isn't it
22 true that the indices that you relied upon none of those
23 would show any improvement even though fish screens,
24 assuming they're 100-percent efficient or some other
25 level, none of those indices would show any actual net

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1 improvement in survival even though fish screens, I
2 think, are generally assumed to actually increase the
3 survival of salmon?

4 MR. WERNETTE: I apologize, Joe. I was a little
5 slow picking up your question. I think the -- in terms
6 of direct losses that would be the case. That that
7 portion of impact associated with direct losses because
8 the model is using flow and particles to evaluate -- to,
9 actually, derive the index, that those -- those numbers
10 don't know whether diversions are screened or not.

11 So there has to be a qualitative assessment of
12 effects of screens, or the benefits of screens that go
13 beyond the ability of the model to evaluate that. So
14 from that standpoint of direct losses it wouldn't be very
15 useful. You'd have to really depend on it then to
16 evaluate how it might affect indirect losses, which would
17 be associated with decreased predation losses and other
18 things that would be related to things other than being
19 directly diverted onto islands, or to the CVP, or at the
20 State project -- at the CVP.

21 MR. NELSON: And when you refer to direct losses
22 you're referring to mortality, aren't you?

23 MR. WERNETTE: I'm referring to mortality that
24 would occur from being entrained into a diversion, either
25 agricultural diversion, or a State or Federal water

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1 project facility.

2 MR. NELSON: Thank you. I'd like to move on to a
3 question for Mr. Sweetnam.

4 Mr. Sweetnam, in your rebuttal testimony -- in
5 the Department's rebuttal testimony it is stated that
6 Delta Wetlands Project has, quote, "the potential to
7 erode the tenuous relationship between Delta smelt and X2
8 further."

9 Isn't it true that under the final operations
10 criteria Delta Wetlands must comply with the X2
11 requirements in the Bay-Delta Accord and the Water
12 Quality Control Plan?

13 MR. SWEETNAM: Were you asking me -- say that
14 again, please.

15 MR. NELSON: You assert in the rebuttal testimony
16 that "Delta Wetlands has potential to erode the tenuous
17 relationship between Delta smelt and X2 further in
18 reference to the baseline established by the Accord."

19 Isn't it true, however, that under the final
20 operations criteria Delta Wetlands must comply with the
21 Accord and Water Quality Control Plan's X2 requirements?

22 MR. SWEETNAM: Yes.

23 MR. NELSON: Thank you. Ms. McKee, I have a
24 question with respect to your testimony on the basin plan
25 and what the basin plan requires.

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1 Patty, can you put up the overhead, please, for
2 just a minute. Thank you.

3 In the Fish and Game rebuttal testimony it's
4 asserted that the basin plan sets an absolute maximum
5 temperature differential of five degrees Fahrenheit
6 between discharge and receiving waters.

7 Now, what I have up here on the overhead is a
8 page from the basin plan which is the State Board's
9 Exhibit 13, page Roman numeral 3-8.00.

10 Now, isn't it true looking up at the upper
11 right-hand corner it states, "at no time or place shall
12 the temperature of cold to warm intrastate water to be
13 increased more than five degrees above natural receiving
14 water temperature"?

15 Now, Ms. McKee, isn't it true that an increase
16 in water temperature is different than a temperature
17 differential?

18 MS. McKEE: Yes.

19 MR. NELSON: And also isn't it true looking at the
20 next paragraph it states, "in determining compliance with
21 the water quality objects for temperature appropriate
22 averaging period may be applied provided beneficial uses
23 will be fully protected"?

24 Do you agree with that statement?

25 MS. McKEE: Yes.

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1 MR. NELSON: I'd like to move on -- Ms. McKee, I
2 believe this question still goes to you.

3 In your testimony you make an assertion that --
4 on page 10 of your testimony at the bottom of the third
5 paragraph you state, "that an increase in juvenile
6 winter-run mortality by an annual average of 3.5 percent
7 increases the probably of extinction from 93 to 97
8 percent."

9 Are you asserting that Delta Wetlands will have
10 a 3.5 percent increase in probability of extinction of
11 the winter-run chinook salmon?

12 MS. McKEE: I say "this model" and I was referring
13 to the Stochastic Life Cycle Model for winter-run chinook
14 salmon that the National Marine Fishery Service has used.
15 And what I state is:

16 In this Stochastic Model used in similar
17 circumstances, what we're here testifying to today, to
18 evaluate what the result of an impact is in terms of a
19 mortality level. What that translates to in terms of
20 probability of extinction, that the model basically shows
21 that with an estimated 6 percent baseline and an
22 estimated 3.5 percent increase, annual increase in
23 mortality that it would increase the probability of
24 extinction from 93 to 97 percent.

25 MR. NELSON: Now --

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1 MS. McKEE: And basically you just asked me -- put
2 up either of them.

3 MR. NELSON: I asked you: Did you calculate this
4 with respect to Delta Wetlands, or was it --

5 MS. McKEE: This was calculated -- this was
6 calculated for the effects of predation in the Delta.
7 But in my discussion with the National Marine Fishery
8 Service they confirmed that it doesn't matter if it's a
9 predation mortality on juveniles, or a temperature
10 mortality, or a project mortality to the Delta Wetlands.
11 The purpose of the Stochastic Model is to evaluate if you
12 change the survival rate of the juveniles in the Delta
13 regardless of the reason for the mortality.

14 MR. NELSON: Ms. McKee, did you calculate --

15 MS. McKEE: Yes.

16 MR. NELSON: -- the Stochastic Life Cycle Model for
17 the Delta Wetlands Project?

18 MS. McKEE: I did not calculate the Stochastic Life
19 Cycle Model. That is property of NMFS, but I did look at
20 what Jones and Stokes and the EIR predicted would be the
21 change in annual mortality in winter-run due to the Delta
22 Wetlands Project.

23 MR. NELSON: All right. Now, Ms. McKee, I'd like
24 to ask you this question --

25 MS. McKEE: Can I --

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1 MS. MURRAY: I object.

2 MR. NELSON: I -- I --

3 THE COURT REPORTER: I can only do one at a time.

4 MS. MURRAY: We're fighting for the microphone.

5 HEARING OFFICER STUBCHAER: Just a moment.

6 MS. MURRAY: I'd just like to say that she is not
7 done answering her question. He asked if she had modeled
8 3.5 percent. She is answering she has done a percentage
9 calculation. So she's not done.

10 MR. NELSON: Mr. Stubchaer, she answered my
11 question. If I could follow it up with something she may
12 be able to --

13 HEARING OFFICER STUBCHAER: She's entitled to give
14 uninterrupted answers to the questions. So if you were
15 not completed, you may complete. If you were complete,
16 say so.

17 MS. MCKEE: This is exactly what I think what you
18 were asking for in your original question which is: Have
19 you looked at project affects on mortality? And this
20 is -- the overhead is a -- unfortunately, when I plotted
21 this this didn't print out very well. At the bottom it
22 says "years ranked by increasing impact level under
23 no-project operations."

24 So the bottom part of the graph is the Jones and
25 Stokes Mortality Model. And these are the values over

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1 the 70-year period of record annual mortalities that they
2 predict would occur with no-project. This is their
3 mortality index. And, in fact, oftentimes this is
4 multiplied out by a hundred to make it more -- make more
5 sense to the average reader, because an index doesn't
6 seem very meaningful. That would be 17.5; that would be
7 12.5 instead of .175 and .25. The upper graph shows --

8 MS. LEIDIGH: Is this -- Ms. McKee, is this
9 overhead in an exhibit?

10 MS. MURRAY: No. This would be -- I believe this
11 would be a new exhibit, or we can use it as a talking
12 point.

13 MR. NELSON: Mr. Stubchaer, I'd like to object to
14 this.

15 MS. LEIDIGH: I don't think it can be used as a
16 talking point, because it's got a lot of information
17 that's not apparent.

18 MS. MURRAY: I would be prepared to offer it as
19 Exhibit --

20 MR. NELSON: Mr. Stubchaer, that's not going to
21 solve any of this problem. In fact, this is a very
22 complicated chart that no one has seen. It's being --
23 she's using this to relate to a model that NMFS has.
24 It's a proprietary model. I don't know if it's been
25 released. I would like to have all of this discussion

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1 struck. We're dealing with stuff out of a model she --
2 no one has.

3 HEARING OFFICER STUBCHAER: Going back how far?

4 MR. NELSON: I'd like to now move to have the
5 testimony on page 10, third paragraph, which refers to
6 the extinction model and her interpretation of data and
7 the application of a 3.5 percent increase struck because
8 of the fact that none of this data is on the record.

9 We haven't had any opportunity -- we have no
10 idea what she's talking about. We don't know if the
11 mortality -- this population model, or Stochastic Life
12 Cycle Model uses the same assumptions that the JSA Model
13 does with respect to the mortality index. If she's using
14 a mortality index value from the -- the JSA one has
15 different assumptions than the mortality assumptions in
16 the NMFS model. That's a huge difference. We don't have
17 any of that information.

18 MS. MCKEE: May I --

19 HEARING OFFICER STUBCHAER: Ms. Leidigh.

20 MS. LEIDIGH: You were talking about page 10 of
21 what?

22 MS. MURRAY: Of our rebuttal testimony.

23 MR. NELSON: Fish and Game's rebuttal testimony.

24 MS. LEIDIGH: Well, I think you've had an
25 opportunity, and you're having an opportunity to

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1 cross-examine on rebuttal testimony. That's a different
2 issue from this chart up here.

3 MR. NELSON: Actually, I don't mean to be
4 argumentative on this, but the fact is she's stating that
5 she made calculations and she actually used the
6 calculations. That was not clear on this rebuttal
7 testimony. That's why -- or the Stochastic Life Cycle
8 Model. So I'm -- I can cross on this, but there will
9 remain an implication in this testimony that Delta
10 Wetlands will have an impact on mortality and extinction
11 that we wouldn't have the ability to cross, because we
12 don't have the model or any of the information as to how
13 she reached this.

14 HEARING OFFICER STUBCHAER: All right. Ms. Murray,
15 or, Ms. McKee?

16 MS. MURRAY: I'd just like to respond to that. He
17 has -- I'm not quite sure, are we first going to talk
18 about this, or --

19 HEARING OFFICER STUBCHAER: When I said "how far
20 back," I was referring to in this cross-examine. I
21 wasn't talking about going back to the rebuttal
22 testimony, in my mind anyway. I was thinking of going
23 back to the last discussion that we had regarding this
24 particular overhead.

25 MS. MURRAY: Right. Because the -- as Ms. Leidigh

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1 said, we put out the rebuttal testimony the same day as
2 everybody else did. And we're now here to cross-examine
3 on that rebuttal testimony.

4 As to this light, she is using this to answer
5 his question which says: Have you calculated the amount
6 of percent mortality? And -- I -- I think it's relevant.
7 I think it would be helpful to put it in the record as an
8 exhibit, but I think we could also just use it as a
9 talking point to say this is --

10 HEARING OFFICER STUBCHAER: I think it's too late
11 to put it in the record, because it's pretty substantial.
12 And I don't think it's fair to use it as a talking
13 pointed either.

14 MS. LEIDIGH: Uh-huh.

15 HEARING OFFICER STUBCHAER: I think that this
16 particular overhead should be stricken from the record.

17 MS. MURRAY: Can I just clarify that all this is
18 just taking JSA data and re-plotting it. They gave us
19 that gray area, which we didn't think was very helpful so
20 we re-plotted it.

21 MS. McKEE: It is in the EIR.

22 MS. MURRAY: This is not new data.

23 MS. McKEE: I can show you the pages in the EIR.
24 We just expanded the axes so that you could actually see
25 the data point.

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1 MS. MURRAY: Right.

2 MS. McKEE: We have not modeled anything.

3 HEARING OFFICER STUBCHAER: I thought there was
4 discussion of it being from a different model.

5 MS. MURRAY: No. This is out of the EIR. And,
6 again, we did not feel that we could tell what the --

7 HEARING OFFICER STUBCHAER: Is this the same index
8 where the cap -- on the bottom part of this overhead
9 where the cap is 400, or is it 100?

10 MS. McKEE: No. This is the mortality index that
11 Warren discussed in his recross this morning extensively
12 before he explained --

13 HEARING OFFICER STUBCHAER: On the winter-run?

14 MS. McKEE: -- the entrainment index. Yes, this is
15 the winter-run mortality index.

16 MR. NELSON: Ms. -- I'm sorry.

17 MS. McKEE: And these are the values represented in
18 the EIR. It's just because the axis was so compressed in
19 the EIR, and the way it was plotted, visually, you could
20 not see the incremental changes. And there were no -- so
21 we just re-plotted it to show you. And to answer this so
22 you could actually see the percentage change. But
23 nothing has been modeled by the Department.

24 MR. NELSON: Mr. Stubchaer?

25 HEARING OFFICER STUBCHAER: Mr. Nelson.

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1 MR. NELSON: When the Draft EIR came out there were
2 no ESA of operations. I'm not sure how Fish and Game is
3 going to assert that this is out of the Draft EIR, when
4 the ESA consultation wasn't completed until this year.

5 MS. MURRAY: I do want to clarify it's from DW 4
6 and DW 5 Exhibits.

7 MS. MCKEE: I apologize, it's exhibits.

8 HEARING OFFICER STUBCHAER: Well --

9 MR. NELSON: I object to the presentation of this.

10 HEARING OFFICER STUBCHAER: We now have a -- excuse
11 me. Go ahead, I interrupted.

12 MR. NELSON: No. Sorry. The presentation of this
13 evidence is prejudicial to us in the sense that we have
14 no ability to look at this and take any type of reasoned
15 comment from our experts on this as to whether this is an
16 accurate presentation of data; what this actually means.

17 You know, to me this is a couple of graphs that
18 I have never seen, that we've never been able to consult
19 with our experts on. And in between that and information
20 that -- going back to this line of questioning that we've
21 gotten into as to this extinction model that was used,
22 that she's asserted, we're dealing with a lot of unknowns
23 with a very incomplete record here.

24 And I can't conduct any meaningful
25 cross-examination without knowing -- without having that

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1 extinction model, without having all the data here.
2 This -- I'm dealing with a very, very short deck of
3 cards.

4 MS. BRENNER: That's why you should strike the
5 testimony just as well.

6 HEARING OFFICER STUBCHAER: Just a second. We're
7 going to go off the record for a minute.

8 (Discussion held off the record at the bench.)

9 HEARING OFFICER STUBCHAER: Back on the record.
10 We will strike the last overhead and ask the panel to
11 respond using exhibits that are already in the record.

12 And regarding the extinction model, perhaps, in
13 your questioning you can determine whether that is --
14 what the status of that is, I'm not clear. And we'll go
15 to the weight of the evidence on your objection.

16 MR. NELSON: Okay. Ms. McKee, the extinction model
17 that you're referring to, you referred interchangeably to
18 extinction and Stochastic Life Cycle Model. Aren't both
19 of those discussed in the -- the first time they've
20 actually been released is in the draft -- the proposed
21 Recovery Plan that was issued August 13th?

22 MS. MCKEE: No. The Stochastic Model is a model
23 that NMFS has been working on under development for some
24 time. And they have used this for the Department's
25 striped bass, Habitat Conservation Plan, and it's

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1 discussed quite freely in the interagency ecological
2 program where I believe Jones and Stokes and anyone who's
3 working on salmon issues attends the Salmon Project Work
4 Team. Mr. Steve Lindley (phonetic) attends those.

5 We are in the process of trying to constantly
6 improve upon that Stochastic Model. And that's,
7 actually, a part of the original OCAP biological opinion
8 with the Central Valley Project and the State Water
9 Project in which four, five years ago we determined that
10 we needed to have some kind of a life cycle model for
11 evaluating both the CVP and State Water Project
12 operations and projects that came on line.

13 MR. NELSON: Is the Stochastic Life Cycle Model now
14 finalized, or is it still under development?

15 MS. McKEE: It was finalized sufficient for use in
16 the striped bass HCP. But as we continue to do
17 experiments through the IEP, which is the acronym for the
18 Interagency Ecological Program, and as we identify more
19 clearly mortality factors and values for given life
20 stages, then we constantly are improving.

21 My understanding from speaking to Mr. Lindley
22 recently is it's constantly under improvement. Now he's
23 doing some changes in basium -- I'm not a statistician,
24 but it's not a product that will ever be static, because
25 we are constantly improving it as we obtain new

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1 information on the salmon survival.

2 MR. NELSON: This is a NMFS model?

3 MS. McKEE: Yes, it is.

4 MR. NELSON: Isn't it true that NMFS did not use it
5 in its consultation on the Delta Wetlands Project?

6 MS. McKEE: That is correct. And my understanding
7 is because NMFS, like other government organizations is
8 multifaceted and Mr. Lindley was not asked to participate
9 in the Jones and Stokes consultation. It's -- no one
10 asked him.

11 MR. NELSON: Actually, Patty, I need to -- one
12 second, I need to see a document.

13 MS. LEIDIGH: Ms. McKee, what did you mean by the
14 Jones and Stokes consultation?

15 MS. McKEE: I'm sorry. The Delta Wetlands
16 consultation. That's a correction.

17 MS. LEIDIGH: Thank you.

18 MR. NELSON: Mr. Stubchaer, we'd like to put up two
19 pages from the proposed recovery plan that Ms. McKee has
20 referred to in her rebuttal testimony that discusses the
21 Stochastic Life Cycle Model that she just testified to.

22 MS. MURRAY: Can I clarify? Ms. McKee testified
23 to -- what draft were you on when you made your testimony
24 and what draft did this come out of?

25 MR. NELSON: I'm referring to the proposed -- this

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1 is a comment from NMFS. Its proposed recovery plan
2 describing the status of the Stochastic Life Cycle Model.

3 MS. MURRAY: And this is new evidence, a new
4 exhibit that we have not had a chance to --

5 MS. BRENNER: You relied on --

6 HEARING OFFICER STUBCHAER: The question is: Did
7 Ms. McKee refer to this in her rebuttal testimony?

8 MS. McKEE: The question -- no, I did not refer to
9 this.

10 MR. NELSON: Isn't it true, Ms. McKee, that in your
11 page ten you state:

12 "Recently the National Marine Fishery Service
13 also developed a Stochastic Life Cycle Model for
14 winter-run chinook salmon which can show -- examine how
15 incremental increases -- actually, I need to jump up one.
16 I need to find where it says it. Actually, it's the
17 sentence before.

18 "This information is already available in the
19 form of an extinction model developed for the Federal
20 recovery planning process which was used to develop the
21 above delisting criteria for the winter-run chinook
22 salmon."

23 MS. McKEE: And then my subsequent sentence states:
24 "And recently they also developed a Stochastic Life Cycle
25 Model." There are two models. And, no, I did not have

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1 any knowledge that this particular paragraph was in the
2 final recovery plan. I had not even received the final
3 recovery plan on that date.

4 MR. NELSON: And --

5 MS. MURRAY: I object. I went through this
6 yesterday.

7 HEARING OFFICER STUBCHAER: Just let him --

8 MR. NELSON: Ms. McKee, aren't you on the internal
9 review team for the proposed recovery plan?

10 MS. MCKEE: Yes, I am a special advisor, but I --
11 like any member of the public or agency was waiting for
12 my final copy to arrive.

13 HEARING OFFICER STUBCHAER: Ms. Murray?

14 MS. MURRAY: And I -- I object. He's
15 cross-examining on something that was created after her
16 rebuttal testimony. As it was disallowed for me
17 yesterday, I think to be consistent we have to disallow
18 this for him today.

19 MR. NELSON: Mr. Stubchaer, the reason I used it in
20 this sense was Ms. McKee was on the internal review team
21 and had access to the documents before August 13th. I
22 would not have used it unless I presented the
23 understanding because she was on the internal review team
24 she had access to this document.

25 MS. MURRAY: I think she just testified that she

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1 did not have access to this.

2 MS. McKEE: May I clarify that my knowledge of the
3 Stochastic Model does not come from my participation in
4 the recovery planning process whatsoever. It comes from
5 in NMFS discussing with Mr. Steve Lindley who
6 participates in the project work team, meetings, and who
7 has itemized this in other consultations. And I would
8 have to read the latest section of the recovery plan to
9 see if we're even talking about the same life cycle
10 model.

11 MS. MURRAY: Can we have a ruling on the
12 admissibility?

13 HEARING OFFICER STUBCHAER: Yes. I'm going to ask,
14 again: You did not have this available to you before you
15 prepared your rebuttal testimony; is that true?

16 MS. McKEE: No, I did not. It was suppose to have
17 been issued the last week of July. In fact, in my
18 testimony I state -- I think it's on the preceding page
19 of my rebuttal on page -- where is it? It's on page 10,
20 second paragraph beginning with: For the winter-run
21 chinook salmon.

22 And I pointed out that the final -- the draft
23 final was suppose to be issued the last week of July when
24 we submitted our testimony. And it came the following
25 week.

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1 HEARING OFFICER STUBCHAER: Did you have
2 substantial knowledge of what it was going to say before
3 you prepared your testimony?

4 MS. MCKEE: I had substantial knowledge of what was
5 in the draft plan. But the model that I'm talking about,
6 the Stochastic Life Cycle Model did not come from the
7 plan whatsoever. As I said it comes from participation
8 on the project work teams, working with Mr. Steve Lindley
9 who's working in the CAL/FED Modeling arena. I believe
10 they're even talking about the Stochastic Model as a tool
11 for CAL/FED.

12 And we had used it for the Striped Bass Habitat
13 Conservation Plan. You know, another consultation. And
14 we've been talking openly about its use in future
15 consultations, how it's the type of tool which would be
16 very helpful.

17 HEARING OFFICER STUBCHAER: Okay. Anymore
18 comments, Mr. Nelson, before we make a ruling?

19 MR. NELSON: Actually, I'll let you make the ruling
20 and then I have following questions. I don't have any
21 other questions before you rule.

22 HEARING OFFICER STUBCHAER: Okay. Time -- off the
23 record a minute.

24 (Off the record from 1:31 p.m. to 1:32 p.m.)

25 HEARING OFFICER STUBCHAER: We will not allow the

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1 use of those overheads, but you can continue your
2 questions without referring to the overhead.

3 MR. NELSON: Okay. Ms. McKee, were you ever
4 informed by National Marine Fishery Service that it did
5 not view the Stochastic -- it did view the Stochastic
6 Life Cycle Model as one in development?

7 MS. McKEE: Can you repeat the question, please?

8 MR. NELSON: Were you ever informed by the National
9 Marine Fishery Service, or were you aware that the
10 National Marine Fishery Service considers the Stochastic
11 Life Cycle Model one that is still in development?

12 MS. McKEE: No, not in the context, I believe, that
13 you are implying.

14 MR. NELSON: And my next question is: Did you,
15 actually, run a Stochastic Life Cycle Model on the Delta
16 Wetlands Project?

17 MS. McKEE: I have not run a Stochastic Life Cycle
18 Model. But what I have done is I have reviewed the
19 output both in the EIR and in all of the testimony that
20 pertains to the Winter-run Chinook Salmon Mortality
21 Model. And I have related what my understanding of the
22 incremental increases in mortality in both the ESA
23 alternative and the CESA alternative relative to
24 no-project, and what the magnitude of that impact would
25 be and have knowledge and placed that in the context of

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1 another situation using the Stochastic Model where it has
2 been determined that a change of 3.5 percent survival of
3 juvenile winter-run in the Delta would increase the
4 likelihood for extinction.

5 And my understanding of Figure 7 from
6 Mr. Warren Shaul's testimony is that, in fact, under
7 certain years there will be an increase of up to almost
8 8 percent mortality. And additional incremental
9 mortality -- if I can at least refer to my own internal
10 notes so that I'm clear for the record --

11 MR. NELSON: Mr. Stubchaer, I'd like a ruling on
12 her use of the chart that you actually said was not
13 allowed.

14 HEARING OFFICER STUBCHAER: The chart she's looking
15 at was allowed.

16 MR. NELSON: I'm sorry. Was that chart allowed?

17 MS. McKEE: Figure 7 was allowed -- I'm looking at
18 my own -- I can use this as my own notes on the subject,
19 my own calculations of the data?

20 MR. NELSON: That's what I'm asking: Can she use
21 the chart that you have stated should not be allowed
22 because it does not provide evidence that we had. Can
23 she use that --

24 HEARING OFFICER STUBCHAER: I have to ask the
25 question: I thought what you held up there was a

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1 transparency that was used and admitted.

2 MS. MURRAY: No.

3 MS. McKEE: No, these are --

4 HEARING OFFICER STUBCHAER: That's the one that was
5 just there. I see.

6 MS. McKEE: This is the same data as Jones and
7 Stokes Figure 7. It's just when I -- can I have Jones
8 and Stokes Figure 7.

9 HEARING OFFICER STUBCHAER: I understand.

10 MS. McKEE: I have a really hard time making sense
11 of those little blimps on the line. I can't read them.
12 So I have my overhead that makes it much more apparent
13 what those numbers are so that I can testify to that
14 point.

15 HEARING OFFICER STUBCHAER: I think she can refer
16 to her own notes.

17 MR. NELSON: Okay.

18 MS. McKEE: And so in looking at Figure 7 in the --

19 MS. MURRAY: Delta Wetlands --

20 MS. McKEE: Delta Wetlands Exhibit --

21 MS. MURRAY: Five.

22 MS. McKEE: Five, sorry, I'm terrible on this. My
23 understanding is that the annual mortality can increase
24 under the ESA alternative operations by approximately
25 seven-and-a-half percent in some years; over six in some;

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1 over five percent in some. Under the California
2 Endangered Species Act Alternative the maximum change in
3 annual mortality would be somewhere around four percent.

4 MR. NELSON: Now -- are you done? Are you done,
5 Ms. McKee?

6 MS. McKEE: Yes.

7 MR. NELSON: Now, when you refer to the 7 percent,
8 you're referring to 7 percent on the Y-axis of 400?

9 MS. McKEE: No, I'm not. I'm referring to 7
10 percent over base operations. So if base operations are
11 1 percent or 90 many percent, it's just relative to the
12 existing level of impact it would be 7 more percent.

13 MR. NELSON: Are you referring to the data from --
14 from the revised Figure 7, or Figure 12? You're looking
15 at Figure 7 --

16 MS. McKEE: Figure 7.

17 MS. MURRAY: Delta Wetlands 12 --

18 MR. NELSON: I was thinking you were referring to
19 Figure 7 from the biological opinion.

20 MS. McKEE: No, Figure 7 from Mr. Shaul's
21 testimony.

22 MR. NELSON: Now, that is the mortality index?

23 MS. McKEE: Yes, it is.

24 MR. NELSON: We had a line of questioning earlier
25 about what that mortality index does. Are you aware that

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1 in the Delta Wetlands biological assessment, page 5-4, it
2 states:

3 That the mortality index should not be construed
4 as the actual level of mortality that would occur because
5 the simulated monthly conditions cannot accurately
6 characterize the complex conditions in variable time
7 periods that affect survival during migration through the
8 Delta?

9 MS. MCKEE: Yes, I am. And that is my
10 understanding of one of the reasons why it is has been
11 emphasized as a mortality index, as a measurement of
12 mortality. But at the same time there has never been any
13 agreement that the actual levels that it shows are
14 identical to what is happening in the real world. For
15 instance, if the model says base mortality conditions in
16 the Delta are 15 percent, no one is going to argue, well,
17 is it 15 or is it 50? What we've used it for, I believe
18 it was used in the EIR/EIS, what would incremental
19 changes be relative to the level of no-project?

20 MR. NELSON: You -- in my earlier questions I
21 asked -- and we had a lot of questions whether the models
22 predicted direct mortality. Didn't you state at that
23 time that the mortality index did predict mortality
24 directly?

25 MS. MCKEE: The results are a function of

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1 mortality. That is what the model itself states.
2 Whether you call it a mortality level, or a mortality
3 index, it's not telling you how many particles of water
4 are, you know, moving down the Lower Sacramento River.
5 The function that we showed earlier is a mortality index
6 percent. And it's suppose to be calculating how many
7 winter-run are dying as a result of no-project conditions
8 versus project alternatives.

9 MR. NELSON: Would you agree that the mortality
10 index cannot be used to predict an actual level of
11 mortality?

12 MS. McKEE: I think I just stated it is used to
13 evaluate the relative changes in mortality. But no one
14 has -- and no one has even tried or -- it's a moot point
15 whether or not if the base mortality that they use in the
16 model is ten, do we really think that ten percent of the
17 fish are dying in the Delta? That's not the point. It's
18 the relative change under project operations.

19 HEARING OFFICER STUBCHAER: You know I'm not sure,
20 was that -- is that a "yes" or "no"? Ms. Murray this
21 morning was insisting on "yes" or "no" answers. So --

22 MS. MURRAY: And never got them.

23 MR. NELSON: "Yes" or "no"? I guess you need to
24 answer Mr. Stubchaer's question.

25 MS. McKEE: Can you repeat the question?

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1 MR. NELSON: Isn't it true that the mortality index
2 cannot be used to predict an actual level of mortality?

3 MS. McKEE: Yes.

4 MR. NELSON: Thank you. Going back a little bit to
5 the Stochastic Life Cycle Model, I do have one other
6 question. Did you -- in making this comparison where you
7 drew some figures out of the Jones and Stokes data and
8 then compared it to NMFS Life Cycle Model, did you make
9 any inquiry as to whether the assumptions were similar
10 between the Stochastic Life Cycle Model and Mr. Shaul's
11 data?

12 MS. McKEE: Inquire to whom? Could you clarify?

13 MR. NELSON: Did you examine, or find out what the
14 modeling assumptions for the Stochastic Life Cycle Model
15 were and compare them to the assumptions that were made
16 in
17 Mr. Shaul's data?

18 MS. McKEE: I am familiar with the assumptions of
19 Mr. Shaul's model. I did inquire and confirm with
20 Mr. Steve Lindley that it was a moot issue whether or not
21 the Stochastic Model attributed a given level of
22 mortality for juveniles in the Delta, to predation, or to
23 a project.

24 It was a mortality level that the model -- so it
25 made no difference whether or not, and I specifically

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1 asked. So if we simply substituted it for a project
2 instead of this was Delta Wetlands and Delta Wetlands
3 Project caused this level of increase in mortality, would
4 the results still be the same? And he said, yes.

5 MR. NELSON: Ms. McKee, in determining -- in
6 plugging in this level of mortality, did you confirm with
7 National Marine Fishery Service that their value of
8 mortality that they were using in the Stochastic Life
9 Cycle was based on the same assumptions that Mr. Shaul
10 used in developing his mortality index data?

11 MS. MCKEE: When I asked whether or not it would
12 make any difference in any of the assumptions in
13 Mr. Warren Shaul's model, or if it is simply a function
14 of looking at what the incremental change to the base
15 level of mortality is in the Stochastic Model, and my
16 understanding is it's simply looking at what is the
17 incremental change in the level of mortality which was
18 the result of Mr. Shaul's model.

19 None of the internal assumptions of the model
20 mattered since it was simply an index of relative change.
21 And the same thing is so for the Stochastic model.

22 MR. NELSON: I want to make sure that -- I think
23 you finally answered the question in there. But I'd ask
24 again and get a "yes" or "no" answer.

25 Did you compare the assumptions in the

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1 Warren Shaul data to the assume in the Stochastic Life
2 Cycle Model with respect to mortality?

3 MS. McKEE: I think I just answered that.

4 MR. NELSON: Can you answer it "yes" or "no"?

5 MS. MURRAY: I object. She did answer.

6 HEARING OFFICER STUBCHAER: I couldn't tell whether
7 it was a "yes" or "no." I'm going to overrule the
8 objection.

9 MS. MURRAY: And can I clarify that she's not
10 obligated to say "yes" or "no"? She answered that --
11 what they told her that it wasn't important, that they're
12 internal ones where not important. That she -- that was
13 her answer. And she can answer, again, but I don't think
14 she's limited to "yes" or "no".

15 HEARING OFFICER STUBCHAER: Well, the previous
16 answer stands on the record.

17 MS. McKEE: I can rephrase that. As -- in and of
18 itself, my answer just described that I, obviously, did
19 discuss the internal mechanisms of Mr. Shaul's model and
20 the Stochastic Model. And I was assured it's the
21 relative incremental change that the model itself is
22 looking at as far as the predictions of change in
23 extinction.

24 And, so, yes, we discussed this and I was
25 assured that it was the relative change that we are

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1 looking at. And, in fact, my understanding is that
2 Mr. Lindley was quite interested in looking further into
3 the internal workings of this model. But it became a
4 moot point. It was the relative incremental change that
5 we were looking at, the results.

6 MR. NELSON: Okay. I'll move on right now. And
7 I'm not sure who this question goes to if it is
8 Ms. McKee, or Ms. Rich.

9 In the rebuttal testimony the Department states,
10 quote, "That fish are exposed to temperatures on a
11 realtime basis and are not responding to a daily or
12 monthly averages. The Department believes that
13 monitoring should be conducted on a continuous hourly
14 basis while discharges are occurring to assist project
15 operations -- how project operations affect the channel
16 water temperatures."

17 Is it Fish and Game's position that Delta
18 Wetlands must comply with the DFG's temperature criteria
19 on an hourly basis?

20 DR. RICH: I'd have to defer to Fish and Game for
21 that.

22 MR. RUGG: Our sense is that, yes, they should
23 comply on an hourly basis.

24 MR. NELSON: And does that stance take into
25 consideration that temperatures vary greatly during a

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1 single day in the Delta?

2 MR. RUGG: Certainly.

3 MR. NELSON: So even though there's upwards to --
4 on average up to four to seven and maybe quite a bit
5 higher variations in temperatures during a single day
6 Delta Wetlands must comply on a hourly basis to Fish and
7 Game's requirement that it not increase -- result in
8 increase of water temperature of more than one degree
9 when it's 59; and no increase in temperature when it's
10 over 66?

11 MR. RUGG: Under those threshold numbers of
12 ambient, yes. Those numbers are necessary to protect the
13 fish.

14 MR. NELSON: Did the Department make any inquiry
15 into the operational feasibility of that -- of an hourly
16 compliance with temperature criteria that had been
17 proposed by the Department?

18 MR. RUGG: We tried. We tried on repeated
19 occasions to talk to the consultant group on means to
20 affect a reasonable standard for temperature in the
21 receiving water. We asked for modeling and what have
22 you. And we were denied. So it was a question of the
23 kind of feedback and the monitoring that was necessary to
24 show compliance was always put off until after this
25 program is completed, after the permit is acquired. We

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1 asked repeatedly about that.

2 MR. NELSON: Mr. Rugg, you said you were denied?

3 MR. RUGG: That's right.

4 MR. NELSON: Well, isn't it true that Fish and Game
5 spent three years discussing various elements of the
6 final operations criteria and the Temperature Monitoring
7 Program?

8 MR. RUGG: The temperature and water quality
9 monitoring was only discussed by the group in the last
10 five months. During that time the issue of how
11 compliance would be achieved, what the feasible
12 ramifications on the receiving water might be were
13 attempted. We tried to get an answer to that question.
14 And we were not -- we were not able to get a satisfactory
15 response.

16 MR. NELSON: Did Delta Wetlands ever explain, or
17 was there -- excuse me, was there ever any discussion
18 about the lack of overall temperature data in the Delta?

19 MR. RUGG: Was there a discussion of the lack of
20 the overall temperature data in the Delta? There was a
21 discussion of what data is available. And the -- and the
22 usefulness of that data.

23 MR. NELSON: Isn't all that data public
24 information?

25 MR. RUGG: Some of the data, certainly.

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1 MR. NELSON: So you had all of that information
2 that is available in the Delta through public
3 information, didn't you?

4 MR. RUGG: It didn't relate to the area of
5 discharge. It related primarily to pumping and the
6 pumping plants, surface water temperatures. We were
7 talking about temperatures below the surface and the
8 bottom and what have you. And there isn't a great
9 database for that, no.

10 MR. NELSON: Was it your are understanding that
11 Delta Wetlands had such information to that effect?

12 MR. RUGG: No.

13 MR. NELSON: So you -- you did not use, or did not
14 make any inquiry using public information that is
15 available in the Delta to attest or examine operational
16 feasibility of this program?

17 MS. McKEE: We did take a look at what information
18 is out there. In fact, I believe we provided Jones and
19 Stokes even with the most recent data that can be found
20 in the Delta, which are the temperatures that have been
21 measured at the State Water Project and the Federal Water
22 Project.

23 But I believe that my cohort here is talking
24 about modeling information. It's not just what's the
25 ambient temperature out there on Tuesday, February 3rd.

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1 But what happens if you add thermal discharge to a body
2 of water that, you know, has a certain capacity so that
3 we could then understand what would be the right
4 averaging periods, what would be the extent of impact.
5 And that's what we were denied.

6 MR. NELSON: Understanding that there was a lack of
7 specific sites and specific information, did Fish and
8 Game undertake -- knowing that it had available to it
9 public information, did it undertake any type of specific
10 study as to whether its criteria was operational and
11 feasible?

12 MS. McKEE: The Department of Fish and Game does
13 not have all of Delta Wetlands and Jones and Stokes
14 hydroa models. We could not perform feasibility studies.
15 I think in our discussions it was our understanding that
16 that would be the Applicant's responsibility to show
17 feasibility and to run those models. And that's the
18 information that was denied.

19 MR. NELSON: Who denied this information?

20 MS. McKEE: My understanding -- well -- I -- I
21 personally recall being in meetings in which we were told
22 that what information we needed was in the EIR. And,
23 perhaps, maybe Mr. Wernette could help us.

24 MR. RUGG: There was also another element that was
25 discussed and that was the feasibility of this. And we

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1 were told that it was none of our business.

2 MR. NELSON: Mr. Rugg, isn't it true that Delta
3 Wetlands informed the Department -- actually, I'll
4 refer -- actually, I have -- I'll direct this question
5 to Mr. Wernette since he was heading this conversation.

6 Isn't it true that Delta Wetlands informed Fish
7 and Game that the difficulty with respect to doing site
8 specific modeling was that the data was not available to
9 do that type of modeling?

10 MR. WERNETTE: I do not recall that specific reason
11 given.

12 MR. NELSON: Were you -- in the discussions we had
13 that were conducted on temperature issues, was the lack
14 of site specific information discussed?

15 MR. WERNETTE: Yes, it was.

16 MR. NELSON: Thank you.

17 MR. RUGG: There was a model discussed during the
18 negotiations that Delta Wetlands proposed --

19 MR. NELSON: Mr. Rugg --

20 MS. MURRAY: I think he's --

21 MR. NELSON: I had my question for Mr. Wernette and
22 I was turning elsewhere. I'm not sure why Mr. Rugg --
23 I wasn't asking any question.

24 MS. MURRAY: I think he's trying to make it a more
25 complete answer.

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1 HEARING OFFICER STUBCHAER: They've had a
2 consultation over at the side and they're trying to
3 complete the answer, but go ahead.

4 MR. NELSON: I'd like to actually turn to some
5 questions for Ms. Rich -- actually, Mr. Rugg. Are you
6 referring to the simple study state temperature modeling
7 that was discussed?

8 MR. RUGG: Yes, I was.

9 MR. NELSON: Isn't it true that the Department of
10 Fish and Game refused what was proposed by Delta Wetlands
11 and the Department Fish and Game denied and said that it
12 was not an appropriate modeling technique?

13 MR. RUGG: We didn't deny it. We said that there
14 were better approaches to studying the problem, but Delta
15 Wetlands withdraw that.

16 MR. NELSON: Isn't it true that the withdrawal that
17 was at one time included in the temperature monitoring
18 program and it was withdrawn after Fish and Game raised
19 objections to it?

20 MR. RUGG: Yeah, because it was a one-dimensional
21 model and it was a three-dimensional system. And we said
22 that we needed a little bit more specificity. That a
23 model -- a site specific model should be identified,
24 developed for the discharge so that we could evaluate the
25 thermal effects and other water quality effects of these

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1 discharges on the Delta.

2 MR. NELSON: And that site specific data is not
3 available; isn't that correct?

4 MR. RUGG: I think there is plenty of data
5 available to put into a model I think, yes. But there
6 would have to be an additional data collection, correct.

7 MR. NELSON: Thank you. I'd like to turn to
8 Ms. Rich. On page 11 of the testimony you state that
9 handling stress in a hatchery produces a set of general
10 stress responses --

11 THE COURT REPORTER: I'm sorry. Could you slow
12 down a bit?

13 MR. NELSON: I'm sorry. I'll start over again. On
14 page 11 of the written testimony the Department states
15 that handling stress in the hatchery produces a set of
16 general stress responses identical to those in migrating
17 adult salmon through high water temperatures.

18 And you then -- I may be missing a word, you
19 then can equate a finding that stress resulting in
20 handling of hatchery salmon at 59 degrees Fahrenheit can
21 be translated to temperature effects on salmon in the
22 wild.

23 Do you remember making that statement, or that
24 may be a summary, I don't know?

25 DR. RICH: First of all for the record it's

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1 Dr. Rich to you.

2 MR. NELSON: I'm sorry, Dr. Rich.

3 DR. RICH: Yes, I made that statement.

4 MR. NELSON: Wouldn't some of those stressors that
5 you referred to confinement stress, handling stress, and
6 injuries resulting from the repeated exposures to
7 anesthetics and susceptibility to disease and
8 confinements all of which salmon in the wild do not have
9 to the same extent as in the hatchery, if at all?

10 DR. RICH: I think the point I was trying to make
11 in the rebuttal here was that it's not so much the
12 stress, per se, whether it's disease, or handling, or
13 whatever. It's the general adaptation syndrome results
14 in a set of responses to stresses. So a handling stress
15 in a hatchery, or anesthetic, or whatever can't be
16 applied to the wild in terms it creates a stress. And
17 there are stresses in the wild. And the stresses are
18 cumulative. So things that are happening in the hatchery
19 situation, many of the things that you just mentioned
20 ultimately can catch up with a fish, if you will, out in
21 the wild and create cumulative stress.

22 MR. NELSON: Are you making a distinction, then,
23 that stress responses, responses to stressors may be the
24 same, but the stress or the factor causing the stress are
25 different between wild and hatcheries?

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1 DR. RICH: They can be, but not necessarily.

2 MR. NELSON: And with respect to the -- I believe
3 this was to the handling of fish, isn't it true that the
4 handling of fish with respect to the temperature of 59
5 degrees Fahrenheit is particular to the fact that there
6 are stressors like confinement stress, repeated exposure
7 to anesthetics, and injuries, and handling injuries?
8 Isn't that -- don't those stressors have to be taken into
9 account when discussing that general guideline for
10 handling the fish over 59 degrees Fahrenheit?

11 DR. RICH: No. I think that there's a great deal
12 of handling that goes on out in the wild. People
13 trapping fish, Fish and Game's own on the sampling
14 programs, NMFS programs, the various agency programs.
15 What's happening at the pump the fish are handled out
16 there as well. You know, handling in addition to any
17 other type of stressor, you know, creates a set of stress
18 responses on the fish.

19 MR. NELSON: So that would, then, be just specific
20 to handling when you say -- applying 59 degrees
21 Fahrenheit, you're applying the responses that occur in
22 the hatchery due to handling and trapping and spawning in
23 the wild; is that correct?

24 DR. RICH: Some sort of stress such as handling, or
25 any other type of stress that happens at 59 degrees in

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1 the wild would have a similar set of reactions.

2 MR. NELSON: As far as you know outside of the
3 monitoring program is Delta Wetlands going to be handling
4 salmon?

5 DR. RICH: I -- I don't know.

6 MR. NELSON: In your written testimony you also
7 state that: We know that fluctuating water temperatures
8 of between 59.9 degrees Fahrenheit and 64.4 degrees
9 Fahrenheit in the San Joaquin River resulted in
10 subsequent reduced egg survival in the chinook salmon.

11 Wasn't the statement referring to a personal
12 communication from Bill Loudermilk to Keith Marine which
13 was cited in Mr. Marine's 1992 temperature review which
14 recorded observations during a trapping and spawning
15 program --

16 DR. RICH: Well, I was --

17 HEARING OFFICER STUBCHAER: Let him finish the
18 question.

19 MR. NELSON: During the trapping and spawning
20 program on the San Joaquin River regarding affects of
21 temperature over a period of time which included
22 fertilization and initial egg incubation?

23 DR. RICH: That may be the communication that
24 Mr. Marine had with Mr. Loudermilk. I talked to
25 Mr. Loudermilk a lot about the followings of what the

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1 statement is all about for the last ten years of so. We
2 worked on a smolt quality project and I asked him the
3 very same questions that apparently Keith asked him. And
4 basically came up with the conclusion what's going on --
5 what he believes to be going on in the San Joaquin at
6 these temperatures was -- from when they looked at the
7 hatchery fish was affecting the egg survival and whatnot.

8 MR. NELSON: And Mr. Loudermilk's observations in
9 this sense were in the Trapping and Spawning Program?

10 DR. RICH: I believe that's correct.

11 MR. NELSON: And his observations were then
12 specific, once again, to the trapping, spawning, trucking
13 of those fish and the effects of that as well as the
14 temperatures at the spawning location; isn't that
15 correct?

16 DR. RICH: As far as I know, yeah.

17 MR. NELSON: On page 12 of your written testimony,
18 rebuttal testimony you argue -- you state that chinook
19 and coho salmon and steelhead do not have higher
20 temperature preferences and tolerances than most other
21 specific salmonids.

22 Were you responding to the testimony of
23 Mr. Marine on that issue?

24 DR. RICH: I believe it was the report put out by
25 Vogel and Marine.

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1 MR. NELSON: Isn't it true that that -- that
2 Mr. Marine was referring to the fact that chinook salmon
3 have a higher temperature tolerance than other Pacific
4 salmon?

5 DR. RICH: I don't recall whether that was it or
6 not. My point there was simply that the references that
7 he cited did not support his contention.

8 MR. NELSON: Isn't it true that -- one of the
9 references you were noting was Brett 1952. Isn't it true
10 that on page 273 of that study it specifically states
11 that spring chinook and coho salmon have a higher
12 temperature tolerance?

13 DR. RICH: It also -- if you read the rest of the
14 report it talks about a 2.3 degree Fahrenheit difference
15 between the five species of salmon that he was studying.
16 And the 2.35 -- 2.3 degrees Fahrenheit may technically be
17 larger, but it's a very small number especially when
18 you're talking about temperature ranges of optimal, or
19 preferred, which he was which was around 54 to 57 degrees
20 Fahrenheit.

21 MR. NELSON: Was he referring to tolerance, or
22 preference when he made the statement that spring chinook
23 salmon or coho salmon have a higher -- isn't it true that
24 he was referring to tolerance and not preference when he
25 was making that statement?

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1 DR. RICH: In fact, I believe he talked about both.

2 MR. NELSON: Isn't it also true that the Wedermyer
3 1973 article which you are addressing in your rebuttal
4 testimony concluded that steelhead response to acute
5 elevated temperatures were consistent with the general,
6 quote, "superior vigor of these fish"?

7 DR. RICH: I don't recall that statement.

8 MR. NELSON: Mr. Wernette, I have a couple
9 questions with respect to the clarification that was
10 issued on August 14th from Fish and Game which Ms. Murray
11 discussed and we asked to have the opportunity to cross
12 on.

13 In that clarification it states that the
14 dissolved oxygen standards that the Fish and Game is
15 proposing in its additional conservation measures should
16 apply to all Delta Wetlands discharges including the
17 habitat islands.

18 Does this dissolved oxygen standard, now, would
19 also apply to any releases of environmental water?

20 MR. WERNETTE: Yes, it would.

21 MR. NELSON: How does the Department propose to
22 deal with an instance where the HMP requires release of
23 water from the habitat island, but Fish and Game's DO
24 standard does not allow for such a release?

25 MR. WERNETTE: We have not worked out internally

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1 how we would resolve that. The -- it's our judgment that
2 the volume of releases from the habitat islands will not
3 be large. The Habitat Management Plan and -- the water
4 budget predicted for the operation of the Habitat
5 Management Plan has -- indicates that those volumes of
6 water are likely to be small. The risk is likely to be
7 small. That will result in significant depressions of
8 DO.

9 Nevertheless, we thought it was appropriate --
10 our Department, our director believed it was appropriate
11 to apply the same criteria to releases from all sources
12 regardless of whether it was for export or not. But
13 internally we are anticipating that that conflict will be
14 fairly remote, but we'll likely have to develop a process
15 internally within the Department on how to deal with
16 that.

17 MR. NELSON: Also in the clarification, you
18 referenced -- and we have since received a Swainson's
19 hawk and greater sandhill crane monitoring plan that was
20 submitted to the Board last week. In that -- in the
21 clarification of the August 14th clarification you state
22 that this plan should be finalized by the Board, or Delta
23 Wetlands before the issuance of the water right permit.

24 Does this mean that Fish and Game expects to
25 negotiate and discuss the terms of this monitoring plan

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1 with the Board and Delta Wetlands before it becomes
2 final?

3 MR. WERNETTE: That's our expectation.

4 MR. NELSON: With respect to this monitoring plan
5 on Swainson's hawk and greater sandhill crane, is the
6 Department using this plan as an implementation of the
7 HMP, or is it part of an implementation of the reasonable
8 and prudent measure?

9 MR. WERNETTE: Actually, we believe it serves both
10 purposes. We wanted to be consistent with what is in the
11 HMP and the Draft EIR that the Board produced which
12 indicated a process where Fish and Game would produce a
13 first draft and probably work with Mr. Canaday of your
14 staff to broker a plan that all of us could agree with.
15 By going through that process it would require in our
16 reasonable and prudent measures to actually develop such
17 a plan. So we hoped to basically serve both purposes at
18 the same time.

19 MR. NELSON: With respect to this monitoring plan,
20 are you issuing it and going to -- is the standard by
21 which this has been issued and the Department is
22 proceeding one with respect to compliance with the HMP in
23 the CEQA sense, or is it compliance with CESA as a
24 reasonable and prudent measure in minimization of
25 incidental take?

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1 MR. WERNETTE: I believe it's for both.

2 MR. NELSON: I have a couple closing questions for
3 Ms. Rich. In your testimony prepared for rebuttal did
4 you rely upon a report you conducted in 1987 from
5 McDonough Holland and Allen?

6 DR. RICH: That was one of the reports I reviewed
7 since we did it, yes.

8 MR. NELSON: Did you ever prepare a separate
9 document in 1987 not provided to McDull, Hull, and Allen
10 which you also rely upon for your temperature testimony?

11 DR. RICH: No, I don't believe so.

12 MR. NELSON: Was this 1987 document which you
13 relied upon the one that was submitted to McDonough
14 Holland and Allen a scientific document in your opinion?

15 DR. RICH: No. It was -- it was put together for
16 something very similar to this hearing. And, actually, I
17 went through very extensive hearing review and the report
18 went back to Dr. Charles Tucot, a thermal expert actually
19 in this country; and other places -- went to a number of
20 other fish physiologists who provided me with feedback.

21 Many of the problems I had in terms of the way
22 it was being presented, they agreed with me. And so it
23 basically was in a different format than like a
24 scientific report one would submit to a journal, but the
25 basic conclusions that I drew from it were, certainly,

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1 sound.

2 MR. NELSON: In drafting that 1987 report did you
3 ever manipulate any data?

4 DR. RICH: That's a loaded term. I don't really
5 understand what you mean.

6 MR. NELSON: Did you ever manipulate -- did you
7 ever change, twist, alter any of the data from your
8 studies?

9 DR. RICH: I -- not in any untoward fashion.

10 MS. MURRAY: I'm going to object to the
11 implications of the question.

12 HEARING OFFICER STUBCHAER: I don't understand the
13 question. Did you say: Did you take any observed data
14 and change it? Is that the question?

15 MS. MURRAY: Well, I also --

16 MR. NELSON: Yes.

17 MS. MURRAY: I have another objection in that it's
18 not in her rebuttal testimony.

19 MR. NELSON: If -- this was partly prompted by her
20 statement that there was problems -- some of the
21 reviewers had problems with -- she possibly had problems
22 with this data as to how it was put together. And so
23 what I was asking is in a sense when she's saying "how
24 it's put together," was she saying that it was -- that
25 data was put together in a manner -- in a certain manner,

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1 was it manipulated, changed, altered, somehow presented
2 in a manner that --

3 HEARING OFFICER STUBCHAER: Can you relate this to
4 the rebuttal testimony?

5 MS. MURRAY: Well, yeah, that's my question. This
6 is not --

7 MR. NELSON: She relied upon this study.

8 HEARING OFFICER STUBCHAER: In preparing the
9 rebuttal testimony?

10 MR. NELSON: In preparing the rebuttal testimony.
11 She just stated that.

12 HEARING OFFICER STUBCHAER: All right. Can you
13 answer the question about the data?

14 DR. RICH: No, I didn't manipulate anything.
15 Basically, it's the conclusions -- I stand by the
16 conclusions of the report which was that we started
17 seeing real problems in the fish which were fed maximal
18 rations of food, which they rarely get in the wild, we
19 started seeing problems in terms of disease and other
20 appetite problems at temperatures above 60 degrees
21 Fahrenheit.

22 MR. NELSON: Could I have one moment to see if I
23 have any other questions?

24 HEARING OFFICER STUBCHAER: Yes.

25 MR. NELSON: To see if I missed anything.

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1 HEARING OFFICER STUBCHAER: How many more questions
2 do you believe you have, Mr. Nelson?

3 MR. NELSON: Actually, I'm done. I don't have
4 anymore.

5 HEARING OFFICER STUBCHAER: No more.

6 MR. NELSON: No more. Thank you for your patience.

7 HEARING OFFICER STUBCHAER: And after staff's
8 cross-examination we'll rule on the motions and do the
9 exhibits. All right. There's been a request to have a
10 brief break right now. So we will do that for the usual
11 12 minutes.

12 (Recess taken from 2:12 p.m. to 2:23 p.m.)

13 HEARING OFFICER STUBCHAER: Call the hearing back
14 to order. Cross-examination of the Fish and Game
15 rebuttal panel by staff.

16 Mr. Sutton wants to go first.

17 ---oOo---

18 REBUTTAL CROSS-EXAMINATION OF THE DEPARTMENT

19 OF FISH AND GAME

20 BY STAFF

21 MR. SUTTON: I was afraid you weren't going to come
22 back, Frank. A couple of quick questions for you. Did
23 you hear me ask Dr. Brown about the comparison between
24 his evaluation of the impacts of the Fish and Game
25 biological opinion compared to the final OPS criteria

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1 versus your evaluation yesterday?

2 MR. WERNETTE: Was that in terms of yield?

3 MR. SUTTON: Yes.

4 MR. WERNETTE: Yes, I do recall the question of
5 Dr. Brown.

6 MR. SUTTON: And Dr. -- when I asked him Dr. Brown
7 said he did not know how you calculated the -- your
8 20,000 acre foot reduction in average annual yield.

9 Can you explain how you generated that number?

10 MR. WERNETTE: Yes, I can. The information that
11 was provided to us by Jones and Stokes in their March
12 Modeling Run, which is Delta Wetlands 5, did reflect
13 operational changes for quite a suite of recommendations
14 that the Department asked him to make at that time.

15 About half, or two thirds of those
16 recommendations did not end up in the Department's
17 biological opinion as a reasonable and prudent measure.
18 So we didn't have a direct modeling output of yield with
19 which to evaluate the biological opinion and the rpm's.
20 So what we did was we took a look at the two measures
21 that did affect yield, those were the diversion
22 restriction not allowing the diversions during the month
23 of March.

24 Secondly, was dedication of additional
25 environmental water that we described in our testimony.

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1 We looked at the -- we looked at the modeling output and
2 subtracted out the loss of not having March diversions
3 and assessed what amount of additional environmental
4 water would be dedicated to offset the impacts of take.

5 And that's where we -- the accumulation of those
6 two we ended up with about a 20,000 acre foot of change.
7 So that -- that was the source of the 134 that we
8 estimated. It's our best estimate of the effects. So we
9 wouldn't expect it to be the same as the March output
10 because that modeled a lot of other restrictions that we
11 did not include in our BO.

12 MR. SUTTON: I believe you also testified that you
13 thought that there was going to be essentially no benefit
14 obtained from the environmental water term. And
15 Mr. Brown -- or Dr. Brown suggested that it would be
16 about 18,000 acre feet available for Delta outflow.

17 Can you clarify that discrepancy, or am I
18 incorrect on what I believe you said during your
19 testimony?

20 MR. WERNETTE: Well, I'd be happy to clarify it.
21 There were -- there's two environmental water measures
22 that are floating around. One is what is in the final
23 operating criteria now that Delta Wetlands has advanced?
24 Those are the -- that's the environmental water that the
25 Department testified doesn't really result in any net

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1 releases for the environment, because of the application
2 or credit that the habitat island releases, that those
3 releases are credited against that and end up with,
4 essentially no -- no balance in the bank account for the
5 environmental water.

6 I was not referring to the environmental water
7 that we are asking for in our reasonable and prudent
8 measure. We believe that will be an effective way to
9 dedicate environmental water to use to offset the
10 unavoidable impacts that the project will cause by the
11 diversions that occur in the other times of the year.

12 MR. SUTTON: So we're talking about two different
13 terms here, then?

14 MR. WERNETTE: That's correct.

15 MR. SUTTON: Okay. Thank you. Mr. Rugg, I'd like
16 to follow-up on your response to a question posed to you
17 by Delta Wetlands attorney relative to compliance with
18 the Fish and Game's temperature criteria in the
19 biological opinion. And you said that, if I understand
20 you correctly, you testified that you thought that they
21 should be in compliance on a hourly basis; is that
22 correct?

23 MR. RUGG: That was my testimony. They should be
24 in compliance with that standard at all times not just
25 every hour on the hour, or when you decide to monitor.

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1 And that's the objective. The reality was yet to be
2 determined through the monitoring program and the ability
3 to measure differences and operational change to meet
4 those criteria.

5 MR. SUTTON: As -- as a permitting agency if we
6 were to take your testimony as you presented it, would --
7 is it your testimony that you would expect the Board to
8 put a permit term and condition in that would require
9 Delta Wetlands to change their operations on an hourly
10 basis to be in compliance with an hourly measurement, or
11 is -- is -- or I'll end it right there. Is that your
12 testimony?

13 MR. RUGG: What we had discussed earlier was a
14 continuous monitoring program with feedback to the
15 operation of the pumps, or discharge structures so that
16 there was a realtime loop. And we would -- we believed
17 that the standards that we had proposed, being
18 biologically driven were necessary to protect those
19 species. Therefore, the compliance with those numbers
20 should be based on something that is real, not a daily
21 average, not a weekly average, or a monthly average. As
22 close to meeting those standards at all times as
23 possible.

24 MR. SUTTON: Are you familiar with thermal
25 discharge requirements that got put on the PG&E plants at

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1 Antioch and Pittsburg?

2 MR. RUGG: Yes, I am.

3 MR. SUTTON: What are -- what are their
4 requirements in terms of compliance monitoring relative
5 to the frequency of monitoring and their response to it?

6 MR. RUGG: In their NPDES permit there's some
7 provision for monitoring periodically. We just went
8 through a 316(a) re-study this last year where I was
9 involved with them; where their discharge in the
10 receiving waters were monitored continuously for 18
11 months to develop an operation strategy and to show us
12 that the changes in receiving water quality were
13 insignificant, receiving water temperature were
14 insignificant.

15 I might add that their discharge is a small
16 fraction of the flow that this project has. Their
17 discharge is 50 csf, maximum, into a very large body of
18 water. The affect of that cooling water flow on that of
19 the San Joaquin/Sacramento River was very, very small in
20 relation to the whole cross-sectional area.

21 MR. SUTTON: In those requirements if a violation
22 occurs, if they go in exceedance, what is the time
23 period, the response period by which PG&E has to get back
24 into compliance? Is that stipulated in their NPDES
25 permit or elsewhere?

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1 MR. RUGG: It's my understanding that in their
2 NPDES permit their maximum terms are instantaneous. That
3 they don't have the ability to average. It's if they
4 exceed those -- the Delta T of 20 degrees and their
5 receiving water values are in excess of four, they're in
6 violation, period. They're not given some many hours to
7 get back in compliance. They're out of compliance. And
8 their operating strategy is such that they try to stay
9 within those limits.

10 MR. SUTTON: I understand what you're saying. I
11 guess what I'm trying to get at is -- let me back up a
12 little bit.

13 When I talked to Mr. Sweetnam about Delta smelt,
14 we talked about a realtime monitor. And the essence of
15 realtime monitoring, or the controlling factor for
16 realtime monitoring for Delta smelt abundance and that
17 sort of thing, is basically how fast you can get the
18 samples, identify them, and get the information out. And
19 realtime basically was about 72 hours.

20 As a permitting agency we have to put down
21 permit terms and conditions that are reasonable in terms
22 of the ability to be in compliance so that when something
23 occurs it has to be able to be responded to in a realtime
24 way.

25 And what I'm trying to get at is: Do you have

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1 an opinion as to if a violation occurs in the temperature
2 criteria, what in your opinion would be a reasonable
3 amount of time for Delta Wetlands to be responsible to
4 make operational changes to their operations in order to
5 respond to reduce the violation?

6 MR. RUGG: My opinion is that it should be as short
7 as humanly as possible. The question that was raised
8 earlier was a model of the assimilative capacity of the
9 receiving water for temperature in that particular area
10 that would help address that question is: What is the
11 response time under -- during tidal conditions to the
12 discharge? And that's where we challenged Delta Wetlands
13 to help us evaluate that.

14 MR. SUTTON: But is -- I'm not asking about the
15 assimilative capacity. I'm asking you about: Isn't the
16 limiting factor here in the salmon with the Delta smelt,
17 what is the minimum physical time that's required in
18 order to get the feedback and make a change in the
19 operation of the project?

20 MR. RUGG: You can do it instantaneously with the
21 proper monitoring tools and feedback loop.

22 MR. SUTTON: Would that require essentially
23 automatic gates and operations on all of the equipment?

24 MR. RUGG: Sure. Now, whether that's necessary or
25 not is unknown at this time.

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1 HEARING OFFICER STUBCHAER: You're affirmative
2 answer was a nod. And I saw the Court Reporter look at
3 you. So, please --

4 MR. SUTTON: Yes.

5 MR. RUGG: Yes.

6 MR. SUTTON: Thank you.

7 MS. LEIDIGH: I'm not going to ask any.

8 HEARING OFFICER STUBCHAER: Any staff questions?
9 Ms. Forster? Okay. Well, that completes the
10 cross-examination of this panel. Thank you.

11 Do you want to do exhibits?

12 MS. MURRAY: Yes. I would like to introduce -- I
13 would request that Exhibits 19 through 25 be accepted
14 into evidence.

15 HEARING OFFICER STUBCHAER: All right. We have a
16 ruling to make on the objection to exhibit --

17 MS. MURRAY: 20.

18 HEARING OFFICER STUBCHAER: -- 20, which was the
19 Lecky declaration. And the ruling is that we will accept
20 that as hearsay. And hearsay is admissible, but cannot
21 be used to support a finding unless there is
22 corroborating non-hearsay evidence in the record. So the
23 objection will go to the weight of the evidence.

24 Do we have any other objections pending? Does
25 staff remember?

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1 MR. SUTTON: No.

2 HEARING OFFICER STUBCHAER: Mr. Nelson?

3 MR. NELSON: Could I ask for a clarification as to
4 what -- we would like to ask for a clarification as to
5 what portions of the cross-examination and any of the
6 testimony on the rebuttal by Ms. McKee with respect to
7 the Stochastic Life Cycle Model was going to be stricken.

8 I cannot, rightfully, remember if there was a
9 final ruling on my request to strike portions of her
10 rebuttal testimony and her -- the cross on those matters.

11 HEARING OFFICER STUBCHAER: We did not agree with
12 your -- accept your motion to strike the rebuttal
13 testimony, which you have had an opportunity to review
14 and cross-examine on. We did strike the overhead which
15 was not in the record, the one which showed the mortality
16 index, I believe it was.

17 And we did not strike any particular portion of
18 the written record. I don't have any ability to do that,
19 because we didn't go back in time to mark when that
20 testimony began.

21 Ms. Leidigh, do you care to add to that?

22 MS. LEIDIGH: No, I think that's correct.

23 MS. BRENNER: Those portions of her testimony
24 should be stricken if it's not accepted --

25 HEARING OFFICER STUBCHAER: I will say this: That

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1 those portions of the testimony which related to the
2 overhead will be considered in the same manner as
3 hearsay; in other words, to the weight of the evidence,
4 because I can't say right now what they are and say
5 strike paragraph 100 through 115. So --

6 MR. NELSON: Okay. Thank you.

7 HEARING OFFICER STUBCHAER: All right. Are there
8 any other objections to the receipt of this evidence into
9 the record? Staff have any comments?

10 MS. LEIDIGH: No.

11 HEARING OFFICER STUBCHAER: All right. Hearing
12 none, with the modifications just discussed, your
13 exhibits are accepted.

14 MS. MURRAY: Thank you.

15 HEARING OFFICER STUBCHAER: Thank you.

16 MS. MURRAY: And can I just point out on
17 clarification on the Table 5 Deborah McKee will consult
18 with Warren Shaul and we'll get that information to DFG
19 Exhibit 5 as soon as possible and no later than a week.

20 MS. LEIDIGH: Okay. So are you asking to have an
21 opportunity to offer that in the record when it's
22 prepared?

23 MS. MURRAY: Yes. And we believe it can be
24 prepared tomorrow, but just in case there's some
25 communication error, or problem --

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1 MS. LEIDIGH: Okay. So we would -- so the Board
2 would need to hold the record open to receive that. And
3 we can put a time limit on that of a week?

4 MS. MURRAY: Yeah. Like I said, we think we can
5 get it by tomorrow, but just in case of a communication
6 problem, or scheduling problem we'd like to have a week.

7 HEARING OFFICER STUBCHAER: Then we would want to
8 add to that time for the other parties to review it and
9 object. We will add time. We'll make it two weeks.

10 MR. NELSON: Okay.

11 HEARING OFFICER STUBCHAER: Now, we need to
12 discuss --

13 MR. NELSON: Mr. Stubchaer, just make it clear, you
14 had stated that parties would have an opportunity to
15 cross through deposition if it becomes necessary after
16 review?

17 HEARING OFFICER STUBCHAER: Yes, that's correct.
18 If that takes more time maybe we'll just -- maybe we'll
19 just make it to the close of the -- well, let's discuss
20 how much time we are going to allow for closing
21 statements/closing arguments.

22 MR. NELSON: Okay. Thank you.

23 HEARING OFFICER STUBCHAER: Ms. Leidigh, do you
24 have a recommendation on how long we should permit
25 closing arguments?

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1 MS. LEIDIGH: Yeah. Generally, we allow some time
2 after the transcript has been completed for the parties
3 to file their closing statements in writing. I'd like to
4 ask the Court Reporter whether two weeks is reasonable,
5 or some other time.

6 THE COURT REPORTER: Two weeks.

7 MS. LEIDIGH: Two weeks, apparently, is reasonable
8 for the transcript to be completed. So I would suggest
9 about three weeks after that, which would be about five
10 weeks from now. Does that sound okay to the parties?

11 MS. SCHNEIDER: So that would be five weeks from
12 today?

13 HEARING OFFICER STUBCHAER: Yes. I had a little
14 interruption. You suggested five weeks, two weeks for
15 the Court Reporter to prepare the transcript and three
16 weeks after that?

17 MS. LEIDIGH: Three weeks beyond that.

18 MS. SCHNEIDER: That is -- we would prefer six
19 weeks, just because there's some uncertainty, we're
20 working on getting the transcripts straighten now.

21 HEARING OFFICER STUBCHAER: So two plus four.

22 MS. SCHNEIDER: Yeah. There's a lot of complicated
23 issues here.

24 HEARING OFFICER STUBCHAER: You have a sympathetic
25 ear up here. So, any other comments on the time to

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1 prepare closing arguments?

2 MR. MADDOW: Excuse me. I wasn't sure. The
3 reference to five weeks from today, I wasn't sure we were
4 setting a date certain, or whether we were going to wait
5 until the day the transcripts are received and start
6 counting four weeks, just how you were going to do that.

7 HEARING OFFICER STUBCHAER: All right.

8 MR. MADDOW: What the puzzlement was was my typical
9 look of puzzlement.

10 HEARING OFFICER STUBCHAER: All right. Let's pick
11 a date certain. Staff is looking at the calendar.

12 MS. LEIDIGH: It looks like October 1, which is a
13 Wednesday.

14 HEARING OFFICER STUBCHAER: All right.

15 MS. LEIDIGH: Is that okay for the parties?

16 MS. BRENNER: What is the day of the week?

17 MS. LEIDIGH: Wednesday, Wednesday, October 1st.

18 HEARING OFFICER STUBCHAER: It's a Wednesday. That
19 means you don't necessarily have to work Saturday and
20 Sunday to meet the deadline.

21 MS. BRENNER: That's what I was wondering.

22 HEARING OFFICER STUBCHAER: Okay. That will be the
23 date that the record will close for the receipt of
24 closing arguments. Now, it probably has to be left open
25 for some other purposes, very limited purposes one of

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1 which is the final EIR.

2 MS. LEIDIGH: Yes.

3 HEARING OFFICER STUBCHAER: Any other things?
4 We've allowed enough time so that the Fish and Game's
5 Table 5 -- we will allow two weeks for the submission --
6 well, one week for you to submit it and another week for
7 Delta Wetlands to review it.

8 And can you do a deposition cross-examination
9 within another week, or is that too short?

10 MS. BRENNER: We can do it within -- that shouldn't
11 be a problem.

12 HEARING OFFICER STUBCHAER: All right. That's
13 fine.

14 MS. SCHNEIDER: Mr. Stubchaer, I believe it would
15 be useful for the record to have an opportunity to file
16 reply briefs, because of the complexity of the issues in
17 this matter.

18 HEARING OFFICER STUBCHAER: Are there any other --
19 does anyone have any comments on reply briefs, pros or
20 cons or neutrals? Mr. Nomellini?

21 MR. NOME LLINI: Are we all going to get to do them?

22 HEARING OFFICER STUBCHAER: Well, if it's fair for
23 one, it's fair for all.

24 MS. SCHNEIDER: We'd suggest another three weeks,
25 at least, after October 1st.

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1 HEARING OFFICER STUBCHAER: All right. We'll allow
2 three weeks. Let's pick another date for reply briefs.

3 MR. SUTTON: October 22nd, a Wednesday.

4 HEARING OFFICER STUBCHAER: All right. Mr. Maddow?

5 MR. MADDOW: Just a question in regard to your
6 reference to the Draft EIR. I have no sense of the
7 timing that you are anticipating. I don't know whether
8 that's been discussed in some other context, or at some
9 other time, but if it has, I've missed it. Can you give
10 the parties any --

11 HEARING OFFICER STUBCHAER: I personally have no
12 sense of that. But I'll call on staff.

13 MS. LEIDIGH: I think I can try to answer that.
14 That is that the draft -- I mean -- obviously, the Draft
15 EIR is out and available for everybody already. The
16 final EIR will be completed before the Board issues a
17 draft decision. And we don't know exactly what the
18 timing of that will be. So it's an indefinite.

19 HEARING OFFICER STUBCHAER: Okay. Any other
20 comments, or questions before I read the closing
21 statement?

22 Mr. Sutton.

23 MR. SUTTON: Yes. Ms. Murray, if I can get a quick
24 clarification. You're going to submit a correct -- or
25 corrected Table 5 from, I believe, it's Fish and Game's

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1 rebuttal testimony; is that correct?

2 MS. MURRAY: No. It's Table 5 from DFG Exhibit 5.

3 MR. SUTTON: From DFG Exhibit 5. May I suggest

4 that we label it as DFG Exhibit 5A to separate it from

5 the original. Would that be okay?

6 MS. MURRAY: Sure.

7 MR. SUTTON: Okay. Thank you.

8 HEARING OFFICER STUBCHAER: Anything else? Okay.

9 Well, the Board will take this matter under submission.

10 All persons who participated in this hearing will be sent

11 Notice of the Board's draft decisions on this matter and

12 any forthcoming Board meeting during which this

13 application will be considered.

14 After the Board adopts a decision on the

15 applications, any person who believes the order is in

16 error will have 30 days within which to submit a written

17 petition with supporting evidence for reconsideration.

18 I want to thank you all for your participation

19 in this hearing. And this hearing is adjourned.

20 (The proceedings concluded at 2:47 p.m.)

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